SEPTEMBER 1954

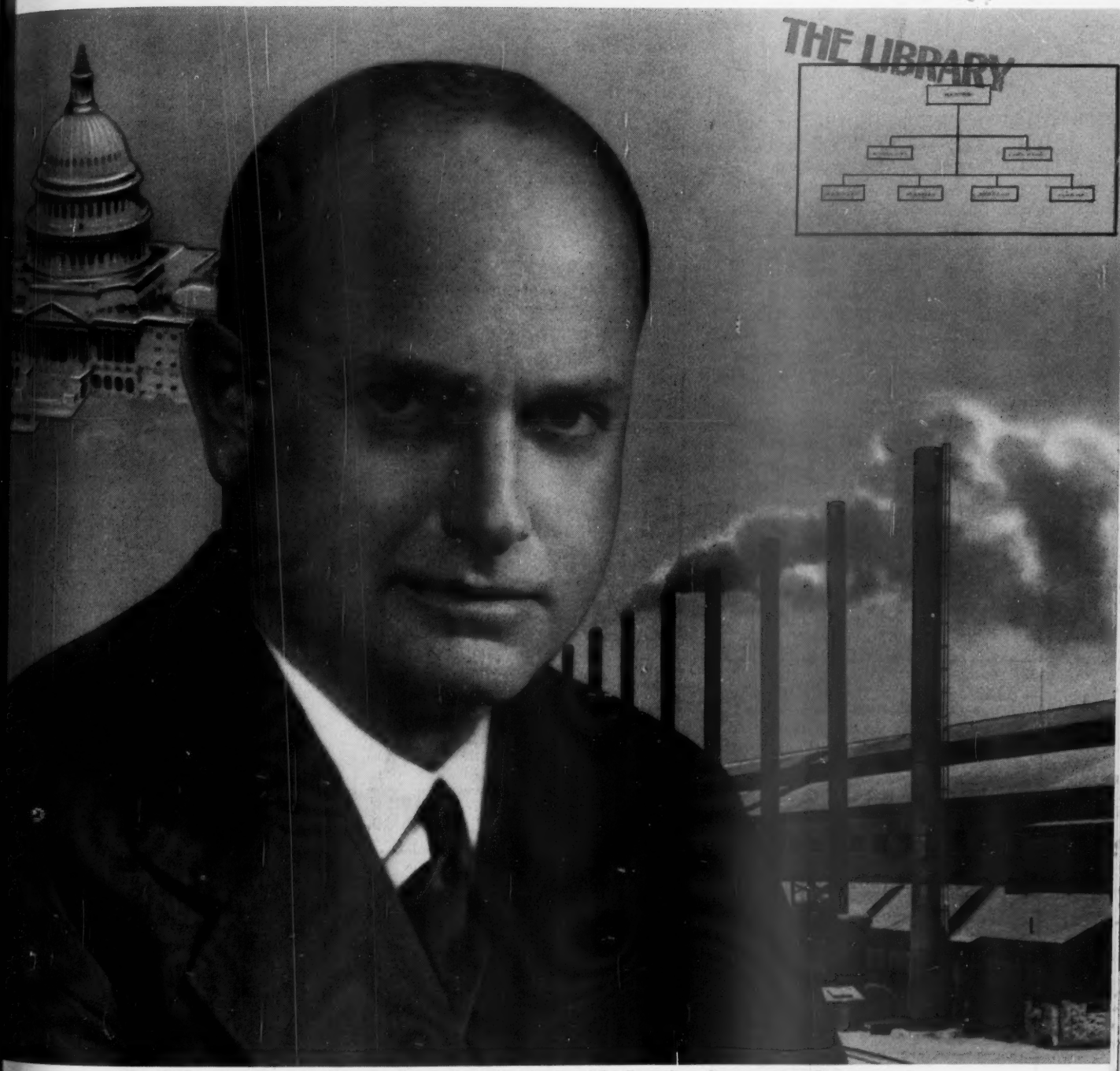
American Engineer

IN THIS ISSUE . . .

- **Engineering with the Hoover Commission**

By
Robert Heller,
of Robert Heller and Associates

THE UNIVERSITY OF TEXAS
SEP 9 '54
THE LIBRARY



Mr. Heller Reviews the Hoover Commission's Work with Complex Government Departments

. . . *Also*

gineering Models—the Answer to Industrial Headaches —A Photo Story—

Complete Report on NSPE's New Building

Plus Late Washington News, Special AE Report, Professional Items

. . . NEW LITERATURE . . .

To help the offering firms determine which literature you require, when requesting an item, be sure to list all specifications shown . . . and say you saw it in the AMERICAN ENGINEER.

ASPHALTIC COATINGS BOOKLET— The Insul-Mastic Corporation of America is offering an eight-page booklet providing considerable asphaltic protective coating information in easily read form. In addition to rust prevention, the booklet names the following uses of Insul-Mastic reinforced asphaltic coatings: Vaporsealing thermal insulation, waterproofing building walls, dampening sound and vibration, controlling condensation and insulating. The booklet is available upon request. Write to The Insul-Mastic Corporation of America, 1141 Oliver Building, Pittsburgh 22, Pa.

—AE—

DISPERSIONS FOR INDUSTRY BULLETIN — How "dag" colloidal dispersions serve industry in a wide range of uses is thoroughly treated in a new Bulletin published by Acheson Colloids Co. A centerfold table lists 40 basic dispersions of graphite, molybdenum disulfide, vermiculite, and zinc oxide, in carriers such as water, oil, volatile hydrocarbons, resin solutions, alcohol, glycol, and wax emulsions. 108 specific products and processes aided by "dag" dispersions are mentioned. In addition to the more common lubrication, metalworking and electrical applications, selected dispersions used as interior and exterior coatings for television tubes, opaquers for the graphic arts, reproducible soil standards for textile and detergency research are among those mentioned. Available from Acheson Colloids Company, Division of Acheson Industries, Inc., Port Huron, Mich.

PELLET-TYPE CALCIUM CHLORIDE—A sixty page manual, entitled Peladow, gives a complete and authoritative report on the newly developed, high-test, pellet-type calcium chloride and is published by The Dow Chemical Co. It explains the rapid and simple unloading methods that have been devised for the pellets, storage and handling of calcium, and points out the significance of the bulk factor. Sections are devoted to Peladow's use in connection with highways, concrete, tire ballast, coal shipments, and others. Featured is a step-by-step, illustrated explanation of the recommended procedure for unloading tank cars of dry Peladow by a process of dissolving with water and pumping to storage or mobile units for immediate application. Thirty-five photographs and a dozen charts and graphs are incorporated in the manual. The manual can be obtained by writing Inorganic Sales, Department 1, The Dow Chemical Company, Midland, Michigan.

GRADALL PUBLICATIONS — A factual, four-page folder concisely reviewing the recently announced Crawler-Mounted Gradall has just been issued by the Gradall Division of the Warner & Swasey Co., showing how the crawler is driven and maneuvered with hydraulic power, covers the controls for the machine, and gives its working ranges in chart form. Warner & Swasey also announce "The Gradall Man," a quarterly for owners and operators.

Each issue will contain a feature story on a construction project involving earth-moving problems. Write to The Warner & Swasey Company, 5701 Carnegie Avenue, Cleveland 3.

HEAT EXCHANGER TUBES BOOKLET — Aluminum heat exchangers is the subject of "Alcoa Aluminum Heat Exchanger Tubes," latest in the Aluminum Co. of America technical booklet series. Alcoa's new booklet presents the complete story on these tubes, emphasizing factors that provide the combination of low cost and corrosion resistance which makes aluminum heat exchanger tubes attractive to industry. Part of the 24-page, two-color booklet covers the economies in using Alcoa heat exchanger tubes. Other sections report service and laboratory experience in the use of aluminum heat exchanger tubes with cooling waters, discussing successful applications of aluminum exchangers in the petroleum, and related industries. Such operations as catalytic cracking, desulfurization, ammonia recovery, nitric acid handling and hydrocyanic acid condensers are discussed and pictured. A section of fabrication, including general design data and alloy recommendations, precedes a technical data section. Copies are available from Aluminum Company of America, 728 Alcoa Building, Pittsburgh 19.

GRINDING AND MOUNTING WHEELS BOOKLET—A new plastic bound reference book on grinding wheels has been issued by Chicago Wheel & Manufacturing Co. All types of Grinding Wheels, Flex Wheels, and the new Break Resistant Cut-Off Wheels are fully described in a most conveniently indexed form. Proper operating speeds of all types of grinding wheels are given on large easy to follow tables. For your copy: write Chicago Wheel & Mfg. Company, 1101 West Monroe Street, Chicago 7.

101 WAYS TO APPLY ELECTRIC HEAT—Principal industrial electric heating applications and methods are described in a new 32-page booklet, "101 Ways to Apply Electric Heat," by Edwin L. Wiegand Co., manufacturers of Chromalox electric heating units. Illustrated case histories show experience-tested ways to apply metal-sheathed electric heating units in myriad industrial jobs. Physical aspects of installation are shown along with a description of the problem, solution and advantages obtained. Some of the heating jobs illustrated could not be done with any fuel except electricity. Similar treatment is given to problems of heating air and gases; liquid heating; melting soft metals and viscous materials, and heating machinery and equipment parts, such as dies, platens, molds and moving parts. Other types of heating include applications in metal finishing, plastics, chemicals, foundries and electroplating. A section is devoted to far-infrared heating, showing 28 typical uses for this new method. For a free copy of the new Chromalox Booklet, write to Edwin L. Wiegand Co., 7621 Thomas Blvd., Pittsburgh 8, Pennsylvania.

STAIRWAY CONSTRUCTION — A new booklet describing the use of Jones & Laughlin Steel Corporation's Junior Channels in stairway construction is now available. The booklet provides specifications for the Junior Channels, and shows some of the buildings in which the channels have been used as stair stringers. Requests for the booklet should be addressed to Public Relations & Advertising Department, Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

—AE—

AIRCO HELIWELD CATALOG—A 16-page catalog by Air Reduction covers in detail features of the Heliwelding process and the equipment used with it. The catalog describes and illustrates in actual welding operation, the manual holders either air or water-cooled, light or heavy duty water cooled machine holders for use with the semi-automatic equipment, the automatic head that can be used with the Heliweld process, and automatic hardfacing process using vibratory feeder. Heliwelding is Airco's tungsten arc welding process which uses an inert-gas shield of helium or argon or both to protect the weld from contamination by the atmosphere. It joins light gauges of the "hard-to-weld" metals rapidly, inexpensively and efficiently. Write Air Reduction Sales Company, 60 East 42nd Street, New York 17, New York.

Letters

Creed Available . . .

Dear Editor:

As Chairman of the Ethical Practices Committee, which was charged with the responsibility of developing a creed for our profession, I was gratified and highly pleased that the creed submitted at the Milwaukee meeting of the Board of Directors was approved.

Now that we do have a creed I believe enough of our membership will be interested to justify publication of the creed by NSPE in suitable form for framing. I am sure many of our engineers will want to display the creed in an appropriate place.

LESLIE C. GATES, P.E.,
Beckley, W. Va.

▶ The creed is now in the hands of the artists and the printers and will soon be available in a form suitable for framing at nominal cost.—*Editor.*

P.E. or Not P.E. . . .

Dear Editor:

Theorizing on whether a young man should become an Engineer or join a labor union provides interesting reading and your articles in AMERICAN ENGINEER have provoked much serious thought on my part because I am extremely interested in the future of my 18 year old son who is now struggling to acquire a college education but is having a hard time in doing so. . . . This summer he is working for me, in the field as an electrical apprentice at $2.00 per hour, $80.00 for a 40-hour week, and is in love with his work, dirty and hard as it is.

He is working, on a permit, with a crew of members of the International Brotherhood of Electrical Workers, whom he respects and they in turn think highly of him and his work, attitude and ability.

These union men, whom I have been employing for the last 26 years and in most cases are upright, respected citizens in their community, receive a base pay for a Journeyman of $3.50 per hour, a Foreman $3.85 per hour and a General Foreman $4.25 per hour.

In addition to this they receive 11 per cent in fringe benefits including compensation and liability insurance, old age benefits, pension and welfare benefits.

My regular men earn from $8,000 to $11,000 per year, working fifty-two 40-hour weeks plus the benefits mentioned, with no responsibility other than to know how to interpret a specification and how to get production out of a gang of their fellow members.

There are plenty of jobs for foremen and general foremen and it would only take me about 6 years to put my son into one of these jobs.

I have men who have been employed steadily for over 20 years. At 19 years of age a young man is facing 3 to 4 years of service with a reserve period of 3 years more which added to his 4 years of college, if he is lucky enough to get out in that time, makes him at least 25 years of age when he is ready to go to work as a cadet or a cub engineer for maybe $5,000 a year.

On the other hand if he works for 4 years and gets his Journeyman's card at 22 and $140.00 a week and does a stint of 2 years

(*Continued on page* 5)

REVOLVATOR
RED-GIANT
features
Safety-Ease

Durability — built in by 50 years of Revolvator Co. experience—is still the fundamental of the Red Giant liftruck line. Maneuverability, plus the safety of their exclusive double stroke mechanism, make the models shown leaders in their fields. There is a Red Giant liftruck available for every use—for every capacity.

Write for the full facts today.

REVOLVATOR CO.
8782 Tonnele Ave. North Bergen, N. J.

the SYSTEMS ENGINEER at RCA

Systems engineers conduct studies to determine operational requirements . . . create and synthesize military equipment concepts . . . guide development of new integral elements . . . conduct evaluation programs to determine operational effectiveness.

You** may qualify!* Professional ***ability to create and analyze over-all complex systems and ***experience*** in electronic or electro-mechanical systems engineering required.

There are several opportunities now in:

AVIATION ELECTRONICS
INFORMATION HANDLING
COMPUTERS • RADAR
COMMUNICATIONS
MISSILE GUIDANCE

Send a complete resume of your education and experience to:

Mr. John R. Weld, Employment Manager
Dept. B-484I, Radio Corporation of America
Camden 2, New Jersey

RADIO CORPORATION OF AMERICA
ENGINEERING PRODUCTS DIVISION ***CAMDEN, N. J.***

Tmks. ®

American Engineer

SEPTEMBER 1954

Kenneth E. Trombley, Editor

Mary Margaret Milbrath, Assistant to the Editor

Vincent F. Waters, P.E., Chairman, Publications Committee, NSPE

•

N.S.P.E. Officers

Clarence T. Shoch, P.E., Pres., 901 Hamilton Street Allentown, Pa.

Robert J. Rhinehart, P.E., Vice Pres. Arkansas Power & Light Company Pine Bluff, Ark.

Louis F. Frazza, P.E., Vice Pres., 225 Bamford Avenue Hawthorne, N. J.

M. F. Wooten, Jr., P.E., Vice Pres., 215 Latta Arcade Charlotte, N. C.

Orland C. Mayer, P.E., Vice Pres., Idaho Power Company Boise, Idaho

John B. Jardine, P.E., Vice Pres., Post Office Box 1429 Fargo, N. D.

Virgil E. Gunlock, P.E., Vice Pres., 525 Arlington Place Chicago, Ill.

T. Carr Forrest, Jr., P.E., Past Pres., 803 Praetorian Building Dallas, Texas

Russell B. Allen, P.E., Treas 4610 Hartwick Road College Park, Md.

Paul H. Robbins, P.E., Ex. Dir. 1121 15th Street, N. W. Washington 5, D. C.

•

I hold the conviction that the first job of the American businessman is not his duty to his company but his duty to his country. Businessmen should participate in government.

—CLARENCE B. RANDALL

•

(Cover portrait by Fabian Bachrach)

BPA

Member, Business Publications Audit

•SPECIAL ARTICLES

Engineering with the Hoover Commission 9
By Robert Heller of Robert Heller & Associates. How engineering has played a major role in the work of the Hoover Commission.

Engineering Models—the Answer to Industrial Headaches 13
—An American Engineer Photo Story—

NSPE Hqs. Building a Near Reality 16

Registration—Then, Now and Tomorrow 18
By Frank H. Prouty, P.E.

Statements in the Matter of Corporate Practice in the State of New York by the Presidents of the NYSSPE and the NSPE 20

An American Engineer Special Report 29
Subject: Strategic and Critical Materials

•REGULAR FEATURES

Letters 3
Professional News Briefs 6
From Washington 21
Professional Postscripts 24
NSPE Believes—Engineers for Government 27
Book Looks 28
With Our Members 35
Strictly Business 41

New Literature . . . . . Inside Front Cover
Classified 31
New Processes and Advertisers' Index 32
Professional Directory 36, 37, 38, 39
What's New—New Products of Interest 42

ADVERTISING INFORMATION:

R. A. Oliver, Advertising Director
American Engineer, 1121 Fifteenth Street, N.W., Washington 5, D. C.
Telephone: ADams 4-1622

NEW YORK:
Austin LeStrange Co., Inc.
420 Lexington Avenue
New York 17, N. Y.
Telephone: MUrray Hill 5-3277

CHICAGO:
LeStrange Co., Inc.
185 North Wabash Ave.
Chicago 1, Illinois
Telephone: DEarborn 2-0248

The American Engineer is published monthly by the National Society of Professional Engineers, 1121 15th St., N. W., Washington 5, D. C. Entered as Second Class Matter at the Post Office, Washington, D. C., under act of March 3, 1879. Copyright, 1954, by the National Society of Professional Engineers. Not responsible for opinions expressed in signed articles. Subscription Rates: $2 per year in advance to members of NSPE and its Affiliated Societies; $3 per year in advance to non-members in U. S. A. and its possessions, Canada, and Mexico. Foreign, $4 per year. Single copy, 35c.

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

--A Letter to the Editor--

"I Want To Be Considered as an Individual by My Employer in the Practice of My Profession . . ."

Dear Editor:

The statement in the June issue by Donald G. Anderson, P.E., that "professionalism is mainly honesty" is a masterpiece of oversimplification and generalization that he fails to explain or support with any reasonable argument.

The basic distinguishing mark of the professional man is his high degree of individual competence in his vocational field. An important gage of his competence is found in the goals he strives to attain. A prime goal of the professional man is the upholding and advancement of public welfare. The duly registered professional engineer is obliged, as an individual, both legally and morally to serve the public welfare. Honesty is a requirement of society on the professional and non-professional alike, and does not provide a means of distinguishing either group.

Since professional obligations are placed on an individual basis, professionalism can only be gaged by standards applied to individual performance. When a professional man joins a union he delegates to the union leaders the right to bargain with his employers regarding his remuneration and other working conditions. An important part of the set of rewards that provides his incentive in life is lost since remuneration and working conditions become geared to a group average standard of performance rather than to his individual capabilities and performance. The facts that collective bargaining suppresses merit considerations in pay schedules and leads to seniority provisions in lieu of bona-fide promotion systems are inescapable.

Mr. Anderson finds "a definite lack of progress for the engineer in industry by NSPE" in his "five short years of engineering experience." He also finds "a tremendous advancement and gain in the professional and economic standards of the engineer in industry." However, he does not and can not claim that engineers' unions have contributed measurably to those standards. Efforts of NSPE have started late and progress has been far from revolutionary toward complete professional recognition of the engineer in industry. These efforts and progress are developing in line with the recent increase in the proportion of engineering registrants employed in industry and the parallel increase in the industrially employed proportion of NSPE membership.

As for progress for the engineer in industry by Mr. Anderson's ESA and Minneapolis Federation of Honeywell Engineers (MFHE), I find nothing remotely resembling a tremendous advancement or gain in professional standards attributable to them. Their latest example of gain in economic standards is a $15 a month *across the board* increase for technicians and engineers in a pay range of $235 to $670 per month, plus improved fringe benefits, *the terms offered by the employer!* There is no evidence of individual merit of recognition of professional advancement governing the pay increase in this case. It appears that Mr. Anderson and his P.E. colleagues have sold their birthright for a mess of pottage.

Mr. Anderson stated that "if we individually were able to compete in industry in the same way consulting engineers do, we would be economically in a much better position." Now he is expressing a wish for more professional individuality, the same commodity he handed over to MFHE when he joined. Perhaps the union is even more an effective leveler than I suspected; its members even show symptoms of blindness to competition between engineers in industry!

The engineers' union exists almost solely for the purpose of economic advancement of those it represents. Matters of technical and non-economic professional advancement receive little or no recognition. Participation in technical and professional engineering societies is, in fact, discouraged by the unions; since the officers of these societies are successful engineers in the upper echelons of engineering, and since the "working engineer" will, in some way not explained, be contaminated by association with such engineers. By this attitude the union serves to further strangle communication between the engineer and his superiors; creates a vacuum in technical matters and in professional matters outside of economic negotiations, and attempts to erect a wall between lower echelon engineers and their engineering and management superiors. Mutual understanding between the various echelons of engineering and management cannot be developed and maintained in such an atmosphere. True professional recognition of the engineer in industry requires such mutual understanding and is not obtainable through employment of the basic weapon of the union, the strike.

I want to be considered as an individual by my employer in the practice of my profession. I want to be placed in a position commensurate with my ability and experience and to be promoted as these qualities are developed, demonstrated by competent performance, and gaged by ample contribution of more and better engineering serving the welfare of both my employer and the public.

Mr. Anderson's letter with its typical union attack on the professional and technical engineering societies was published in the official magazine of NSPE, one of those societies. We "working engineers" can express ourselves through the AMERICAN ENGINEER, NSPE member or not! Would an anti-union letter be published in the national ESA publication if its exists?

DONALD W. GRUNDITZ, P.E.,
La Crosse, Wis.

Letters

(*Continued from page* 3)

as a draftee, at age 24 he can go back to work at $140.00 a week and in a couple of years could be a foreman at $8,000 a year and work anywhere in the world where electricity is in use.

What does the engineering profession offer to a young Engineer that the Union cannot better?

Reading about lack of ethics, cut fees, unprofessional conduct and looking at some of the plans and specifications submitted to us by architects and so-called engineers certainly does not put the profession on a pedestal of glory that would attract a young American who has high ideals of accomplishment and service to his fellow man and his country.

As the father of a young man who is anxious to take his place in the scheme of things, marry and enjoy the American way of life and serve his community, how shall I advise the one person whom I want to see succeed and prosper and be a good American?

What would you do if you were 18 today and had to make your decision for your future welfare?

I am not advising but am seeking advice and surely out of your membership there should come words of wisdom.

EDWARD J. WHITE, P.E.,
Newark, N. J.

Dear Editor:

It is with a certain amount of concern that I read in the Letters to the Editor column the letter of Dean G. A. Marston,

(*Please turn to page* 31)

UNUSUAL OPPORTUNITY FOR AN
EXPERIENCED ESTIMATOR
with a long-established prominent New York City contractor
Must be experienced in heating, ventilating, and air-conditioning engineering. Please write, stating salary requirement and all pertinent information.
Replies held in strict confidence.
BOX 904B, AMERICAN ENGINEER, 1121 15th St., N. W., Washington 5, D. C.

FIRE SIGNALING SYSTEMS
● Engineers, Designers, and Manufacturers of Electrical Systems for the Protection of Life and Property from Fire
See advertisements in Penna. Society Year Book, N. J. P. E., and N. Y. P. E.
ACME FIRE ALARM CO., INC.
C. W. Mitchell, P.E., President
106 Seventh Ave., New York 11, N. Y.

Professional News in Capsule Form

Howard Barlow Is New Director of Washington State Tech • Ford Foundation Sponsors Natural Resources Research • University of Texas Plans Architectural Engineering Library • New Engineering Salary Statistics Are Revealed • Other Items of Interest

Howard W. Barlow, a distinguished member of the Texas Society of Professional Engineers and NSPE, has accepted an appointment from the State College of Washington to the post of director of the Washington State Institute of Technology. To assume the new post, Dr. Barlow leaves the directorship of the Texas Engineering Experiment Station of Texas A. & M. With the latter institution he has also held the position of dean of engineering, as well as having been head of the aeronautical engineering department.

Dr. Barlow holds engineering degrees from Purdue University, the University of Minnesota, and New York University. He has taught at the latter two universities, and has also had extensive industrial experience in the aeronautical field.

* * *

Resources for the Future, Inc., nonprofit corporation with headquarters in Washington, D. C., has recently received a grant of $3,410,000 from The Ford Foundation for a five-year program of research and education in the field of natural resources. Taking account of unexpended funds already received by the organization, the grant will support a program at an average annual level of about $750,000.

* * *

The University of Texas is making plans to establish an architectural engineering library, specializing in building-construction publications difficult to obtain through routine library operations. Printed materials will be collected on such subjects as structural design, building contracting, foundation methods, air conditioning, illumination, acoustics, climatology, building codes, and industrial hygiene.

A $1,000 gift from Robert E. McKee, El Paso contractor, is being used in the initial organization of the library, which will be named in his honor.

Professor Werner Dornberger, architectural engineering department chairman, will direct the project, and a fellowship will be awarded to a graduate student who will begin the library compilations.

* * *

The 1929 engineering graduate who found opportunities few and far between after the stock market collapse is today making up for the lean years, according to a recent story coming out of the Illinois Institute of Technology. A study of the economic status of the Institute's engineering graduates has revealed that members of the class of 1929 currently are earning a median salary of $10,000 to $11,000 annually.

Before the crash, according to Earl C. Kubicek, director of alumni relations and placement, who conducted the survey, the average starting salary for an engineer was around $115 a month, a very good sum at the time. After the crash, however, the few jobs that were available "paid a mere pittance," he said.

By 1934, engineering graduates were starting at less than $100 per month on the average, though the median annual salary for the 1934 class today is $8,500 to $9,000. In contrast, the average starting salary offered Tech's 1954 graduates was $362 per month, according to the figures released by Mr. Kubicek.

* * *

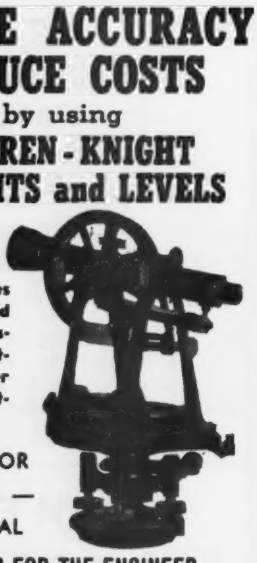
After a survey of 585 beginning chemical engineers and 645 beginning chemists, the American Chemical Society reports that starting salaries are up 5 per cent from a year ago. Medians for chemical engineers were $375 per month for the beginners with a bachelor's degree ($374 for a four-year course, $395 for a five-year course), $425 for those with a master's degree, and $575 for those holding doctorates. The medians for the chemists were $364 per month for a bachelor's degree, $416 for the master's, and $550 for a doctorate.

* * *

Somewhat over 14,000 civilian engineers are employed by the Department of the Army in twenty-two fields of engineering work, accord-

(Continued on page 8)

ASSURE ACCURACY
REDUCE COSTS
by using
WARREN-KNIGHT
TRANSITS and LEVELS



Special features of design and construction assure the greatest value per dollar of investment.

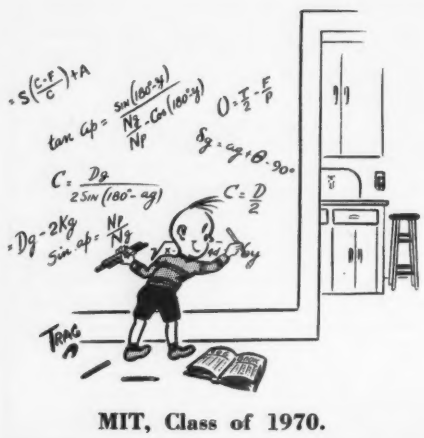
A MODEL FOR EVERY NEED — 10 DAY TRIAL

SERVICES FOR THE ENGINEER

Instruments—New or Rebuilt
Engineering Equipment and Supplies
Rental—any length of time
Repairs—any make
Assistance—by P.E. in making your selections

Send for free Catalog AE-49

WARREN-KNIGHT
1193 N. 12th St., Phila. 7, Pa.



MIT, Class of 1970.

What General Electric people are saying . . .

F. K. McCUNE

Mr. McCune is General Manager, Atomic Products Division

". . . We at General Electric believe that electric companies will be owning and operating a number of atomic power plants within the next ten years.

Second, we believe some of these will be full-scale and, what is most important, they will generate electricity at competitive costs, possibly within five, certainly within ten, years.

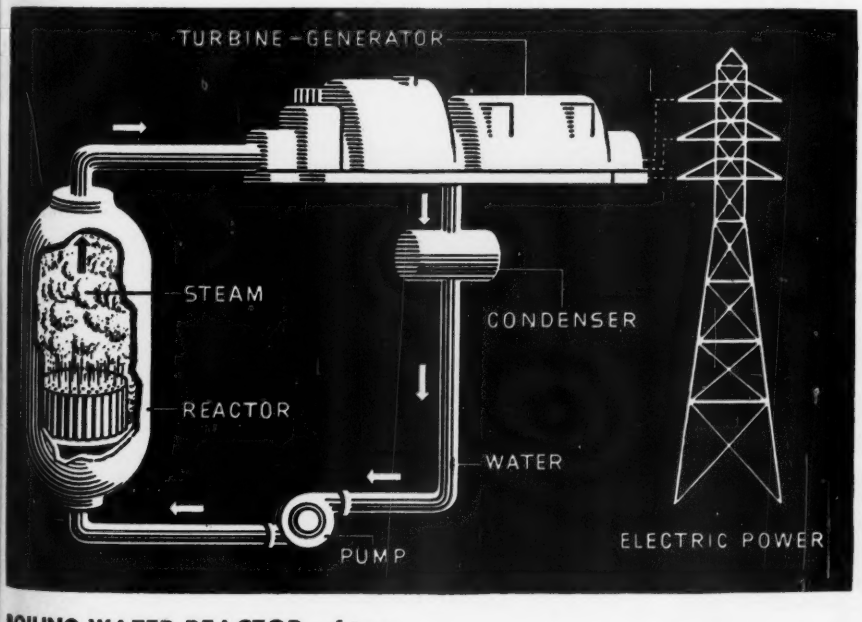
Third, we believe that this will be accomplished without Government subsidy for production plant construction or operation, and that Government-supplied fuel will be priced at cost-of-production levels.

Fourth, we believe that two nuclear reactors best suited for earliest and most effective competition with conventional fuel plants in this country are (a) the light water-moderated and cooled boiling reactor, and (b) the graphite-moderated water cooled reactor. These we think hold greatest promise in the years just ahead.

In saying these production plants will operate without Government subsidy, I do not wish to detract from the immeasurable significance of knowledge developed through A.E.C. contracts. Of course, the Government's large expenditures for research and development of plutonium production reactors, mobile power reactors, and other power reactors forms the base from which private industry can proceed. But, the important thing here is that we believe production size atomic power plants can be made economic. They will stand on their own feet. They may sell products to the Government. They will certainly buy nuclear fuel from the Government. But, trading with the Government need not be a subsidy."

Atomic Industrial Forum Panel
Washington, D. C.

Copies of Mr. McCune's complete talk may be obtained by writing to Dept. Q-2-119, General Electric Company, Schenectady 5, N. Y.



BOILING WATER REACTOR, *of type developed by the A.E.C.'s Argonne National Laboratory diagrammed above, promises electric power at 6.7 mills/kwhr (as compared with 4.5 to 8 mills/kwhr in conventional plants).*

K. R. GEISER

Mr. Geiser is Supervisor of Engineering—Computer Unit, General Engineering Laboratory.

". . . There are three broad areas of manufacturing—manual, mechanization, and automation. In the manual area, physical effort is used to perform an operation by the use of hands or hand tools. In the mechanization area, manually operated power-driven machines, with varying degrees of controls, are used to perform one or more operations. Progressing into the automation area, we find automatic machines which are integrated with transfer devices to perform a series of continuous automatic operations. Here you see how industry can continually upgrade the manual operation into the mechanization area by replacing the hand tool with the machine; and then by adding transfer equipment we progress to the automation area. Please note that manpower will always be required. However, there will undoubtedly be fewer men as operations are automated and the emphasis will shift from the manual skills to the mental skills for both the productive and the maintenance worker.

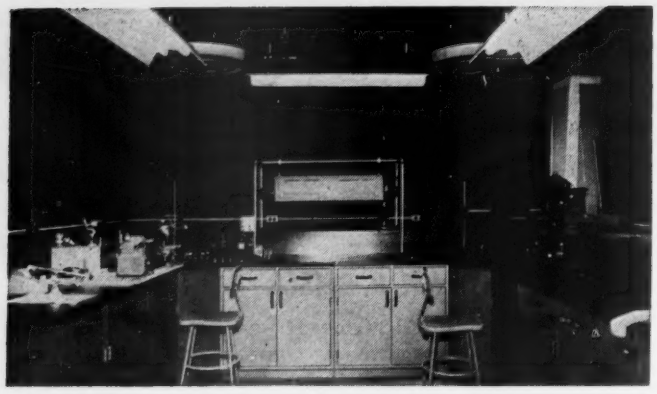
Man has always devoted much of his effort to finding ways and means to accomplish or circumvent the arduous and laborious tasks, especially those not requiring his full ability as a human being. There still exist in industry today many tedious, time-consuming, laborious or simple discrimination jobs which often lack mental stimulus for the people who must perform them. It does not require the full complexity of the human mind and body to carry tote boxes from one machine to the next nor to load parts in a lathe, nor to tighten bolts and solder wires in building, for instance, automobiles or radios.

As surely as man lives and thinks and strives for a better way of life, these things will be replaced.

G.E. Engineering Specialist

Progress Is Our Most Important Product

GENERAL ELECTRIC



You Can Have DRY Air with EXACT Moisture Control

for your comfort, for your process, for testing machines or materials at any time of the year

Niagara Air Conditioning provides you with any temperature and relative humidity you need, held constant or varied at will. Using "Hygrol" absorbent, you save the refrigeration commonly used to condense moisture and make reheat unnecessary in most cases. It gives large capacity with compact, easily-maintained equipment.

This Niagara Air Conditioning Method dries air directly and measurably, using a moisture-absorbing liquid spray. Humidity control is a separate function from heating or cooling.

This gives you precise control over your air conditions with thermostats alone; no moisture-sensitive devices are needed. You have simpler, more trustworthy, less expensive control instrumentation. Niagara precise-control air conditioning installations have the best record for reliability.

Write for information on the application to your problem. Ask for descriptive Bulletins #112 and #121. Address Dept. AE

NIAGARA BLOWER COMPANY

405 Lexington Ave. New York 17, N. Y.

District Engineers in Principal Cities of U. S. and Canada

ing to an unofficial summary of a recent Army survey. Of this number approximately 2,200 are working in the electronic and electrical fields. Also, approximately 1,700 of the 14,000 are in the $8,000 to $12,000 salary class.

* * *

J. R. Anthony, Jr., an attorney and mechanical engineer of Greenville, Texas, has been appointed to the National Panel of Arbitrators of the American Arbitration Association, according to an announcement by Whitney North Seymour, president of the organization. As a member of the panel, Mr. Anthony, who is a member of the Texas SPE and NSPE, will be available for selection by parties submitting commercial disputes for arbitration.

* * *

Dr. Jacob P. Den Hartog has been appointed head of the Department of Mechanical Engineering at the Massachusetts Institute of Technology, according to an announcement by Dr. C. Richard Soderberg, M.I.T. dean of engineering.

Dr. Den Hartog, who since 1945 has been in charge of the Division of Applied Mechanics of the department which he now heads, is one of the world's foremost authorities in the field of mechanical vibrations. He is a graduate of Delft Technical School in Holland and of the University of Pittsburgh, and he has also studied at the University of Gottingen in Germany.

* * *

Plans for the first Electrical Conference of the Petroleum Industry have recently been completed; and the meeting, offering a program featuring leading engineers, scientists, and technicians, is to be held September 27-29 in Tulsa, Oklahoma, at the Mayo Hotel. The conference is being held under sponsorship of the Petroleum Industry Committee of the American Institute of Electrical Engineers with the Tulsa Section of the Institute acting as host. A. C. Monteith, newly-elected president of the AIEE, will be among the featured speakers.

* * *

H. E. Chiles, Jr., president of The Western Company, Midland, Texas, and a member of the Texas SPE, is among a number of business leaders recently elected to the board of directors of the American Management Association. The directors' terms run from 1954 to 1957.

* * *

Dr. Lillian M. Gilbreth, world-famous industrial engineer of Montclair, N. J., will be a visiting professor at the University of Wisconsin during the second semester of the 1954-55 school year, according to an announcement from the university. Dr. Gilbreth will conduct seminars and give lectures in her field in industrial engineering and management for both engineering and commerce students.

* * *

The Illuminating Engineering Society has scheduled its national technical conference for Atlantic City, September 13-17, at Chalfonte-Haddon Hall. The meeting will include events commemorating the 75th anniversary of the first practical incandescent lamp.

* * *

***Correction:*—In a story regarding nominees for ASME office, which appeared in "Professional News" in the August issue, the name of William H. Byrne of New York was inadvertently omitted from the list of vice presidential nominees. Mr. Byrne, who was nominated for vice president of ASME Region II, is also a member of the New York State SPE and NSPE.**

With the Help of Engineers, the Hoover Commission Has Been Made into "a Living, Dynamic, Creative Force for Improvement of Our Government . . ."

Engineering with the Hoover Commission

By Robert Heller
of Robert Heller and Associates

CHEOPS' solar boat, recently discovered, is expected to throw new light on the highly developed Egyptian civilization of 5,000 years ago. Few would be surprised if among its dust covered treasures were found learned papers, prepared by the best brains in the land, recommending improvements in the government—and never acted on!

No 70th century archaeologist coming across the work of the Hoover Commission could say it was another fine academic treatise, prepared by distinguished public servants, scholars, business executives, and management consultants—and left unimplemented.

The difference is that the idea of the original Hoover Commission, established in 1947, has been made into a living, dynamic, creative force for improvement of our government — awakening public interest and political literacy—and in turn kept alive by public support. It is with the work of this first Hoover Commission that we are concerned here.

Added to the very material benefits from its specific recommendations, the Commission's work educated the thinking people in the complexities, inefficiency, and—as then organized—ineffectiveness of the Executive Branch. Above all, its work created a climate which made possible basic reorganization and the follow-through that is so essential.

Task forces were used by the Hoover Commission to gather basic data and to develop specific programs. Some task forces, such as that for agricultural activities, comprised outstanding authorities from a wide variety of related fields. Because of the industrial nature of the Post Office Department, Robert Heller & Associates with a 25-year background of experience among the country's larg-

Robert Heller & Associates headed the task force to study the Post Office Department's problems. Photo at top: Postmaster General Arthur E. Summerfield and his executive staff. Center: The Heller-Washington Team. From l. to r.: Hamilton W. Wright, Gilman B. Allen, Robert Heller, Frank L. Elmendorf, and C. George Krogness. Bottom: Lightweight 3-wheel mail-carrying vehicle to be used in South where climate and terrain permit is typical of new type equipment.

Before and after. The above photos depict the result of light and color improvement at the Richmond, Va., Post Office. Both pictures were taken with identical lens settings.

est and best known corporations was called on to provide the task force to study that Department's problems.

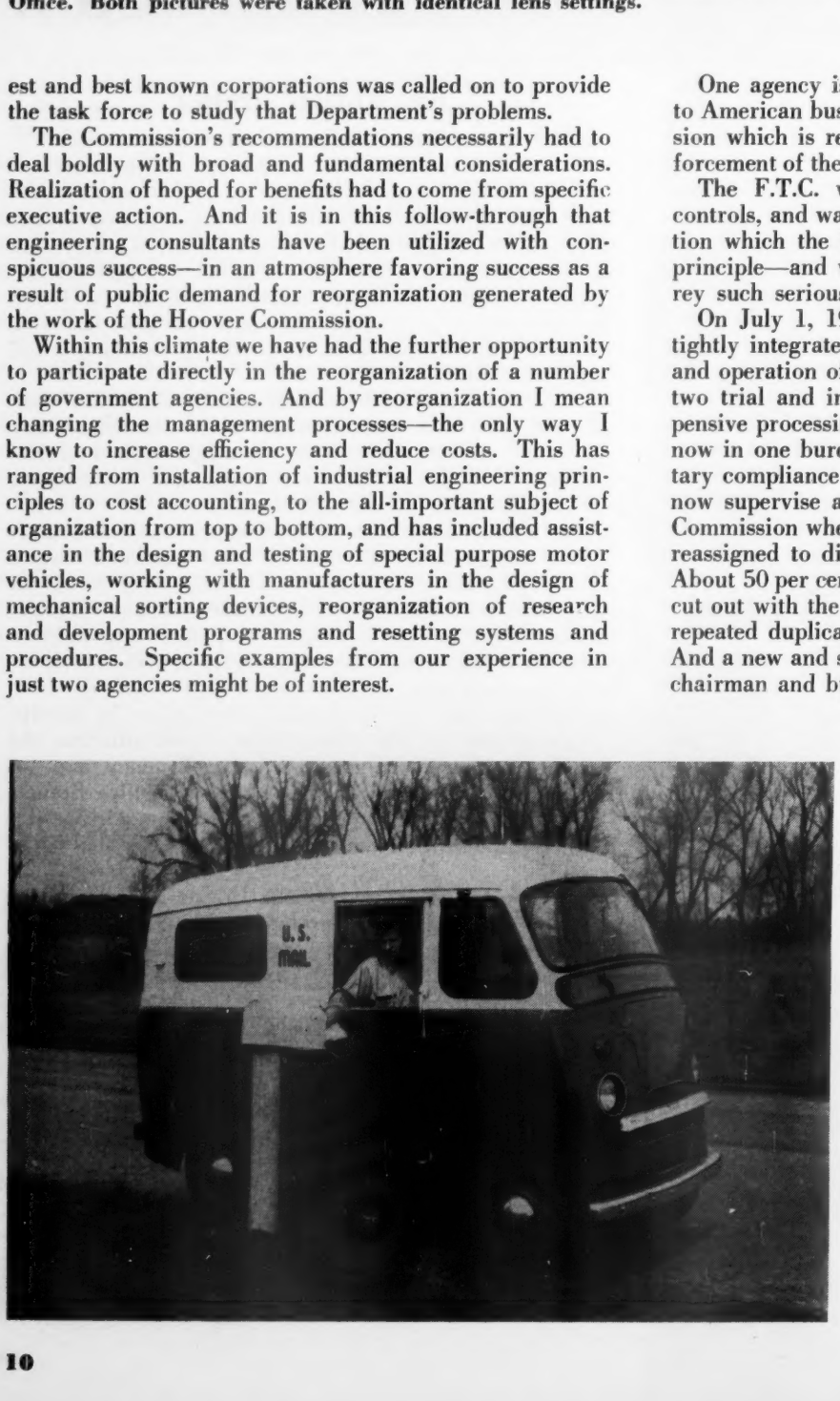
The Commission's recommendations necessarily had to deal boldly with broad and fundamental considerations. Realization of hoped for benefits had to come from specific executive action. And it is in this follow-through that engineering consultants have been utilized with conspicuous success—in an atmosphere favoring success as a result of public demand for reorganization generated by the work of the Hoover Commission.

Within this climate we have had the further opportunity to participate directly in the reorganization of a number of government agencies. And by reorganization I mean changing the management processes—the only way I know to increase efficiency and reduce costs. This has ranged from installation of industrial engineering principles to cost accounting, to the all-important subject of organization from top to bottom, and has included assistance in the design and testing of special purpose motor vehicles, working with manufacturers in the design of mechanical sorting devices, reorganization of research and development programs and resetting systems and procedures. Specific examples from our experience in just two agencies might be of interest.

One agency is small in size but enormously important to American business. This is the Federal Trade Commission which is responsible for the administration and enforcement of the Anti-Trust and Fair Trade Practice Laws.

The F.T.C. was over-organized, lacked management controls, and was tripping over its own red tape—a situation which the Hoover Report had recognized in broad principle—and which caused Chairman Edward F. Howrey such serious concern that he turned to us for help.

On July 1, 1954, Chairman Howrey put into effect a tightly integrated plan which simplified the organization and operation of the Commission. Where there had been two trial and investigative staffs, causing delay and expensive processing of cases, all investigative activities are now in one bureau, all trial work in another, and voluntary compliance procedures in a third. Project attorneys now supervise a case throughout its course through the Commission where formerly a typical case was repeatedly reassigned to different attorneys at various work stages. About 50 per cent of the procedural work is expected to be cut out with the elimination of complex organization and repeated duplicate reviews of cases by various attorneys. And a new and simple group of internal reports keeps the chairman and bureau heads posted as to the amount and



Following the recommendations of the Hoover Commission, a Research and Development Division was established to concentrate on equipment development and methods improvement. At the left is pictured the new "Pony Express," which will use two carriers to a vehicle.

nature of work done by professional members of the staff and as to the status of individual cases.

Most significant about these changes is that they are not just on paper — but are *in operation* — a result that would hardly have been possible in such complete degree before the Hoover Report.

While the F.T.C. is relatively small and essentially professional and administrative in nature, the Post Office Department with over 500,000 employees is one of the largest employers in the country, having the characteristics of some of the nation's biggest industrial corporations. In rough figures it handles 50 billion pieces of mail yearly, operates 40,000 post offices, uses 60,000 vehicles, and consumes $2.8 billion annually in operating costs. Over the years its work load has continuously increased. So have its costs. It handled 210 pieces of mail for every man, woman, and child in this country in 1940. In 1954 this figure will exceed 325 per person.

In 1953 the Post Office Department initiated a determined effort to put into effect the recommendations of the first Hoover Commission. Postmaster General Arthur Summerfield found that he had 40,000 postmasters who were solely responsible to Washington, to which they referred even the most trivial problems. There, decisions on building repairs, equipment needs, accounting problems, personnel problems, and the like were generally made blindly on "precedents" by people who were uninformed about local post office conditions. The excess cost, poor service, and bad employee relations which often resulted from these decisions were inevitable.

Decentralization of operating management had first been recommended by the Penrose-Overstreet Joint Congressional Commission in 1908 and most recently by the Hoover Commission in 1949. The objective was to place authority in the field so that sound operating decisions could be made promptly by competent personnel familiar with local conditions. This would take headquarters officials off the treadmill of paper work and "fire-fighting" and put them in position to concentrate on planning and policy control.

The program called for dividing the country into 15 regions, selected after careful analysis of trading areas and transportation networks, each in turn divided into an average of six districts. The first region, headquartered in Cincinnati and covering Ohio, Indiana, and Kentucky, was inaugurated November 24, 1953. But many things had to be done first.

Basic policy decisions were made regarding functions to be delegated to the regions and in turn to the districts. The extent and level of headquarters control were defined. Size and type of field staff were determined and costs budgeted. Detailed position descriptions and functional organization charts were prepared. Records were segregated for transfer to Cincinnati. Procedures for handling paper work were devised, and office space and equipment were procured. Personnel were recruited—largely from within the postal service—and indoctrinated in the new organization, policies, and procedures. Proposed plans were then reviewed with Congressional leaders to secure their ideas and endorsement as well as with the heads of the postal employee organizations.

The pilot installation was dramatically successful in handling communications promptly and reducing the backlog of local requests for decision. In April, 1954, a second region with headquarters in Chicago was launched. Another was started in June. The others are now scheduled as rapidly as staffs can be recruited and trained.

Closer management has already resulted in better service in many small ways. Longer window hours, changes in pick-up and dispatch, extension of rural routes, and the like—when properly justified by postmasters—have been granted more promptly and intelligently, often at no additional expense. It is hard to pad a budget when the boss is figuratively looking right over your shoulder. This decentralization is a major step in cutting back "big government" and bringing the management of the operations closer to the people.

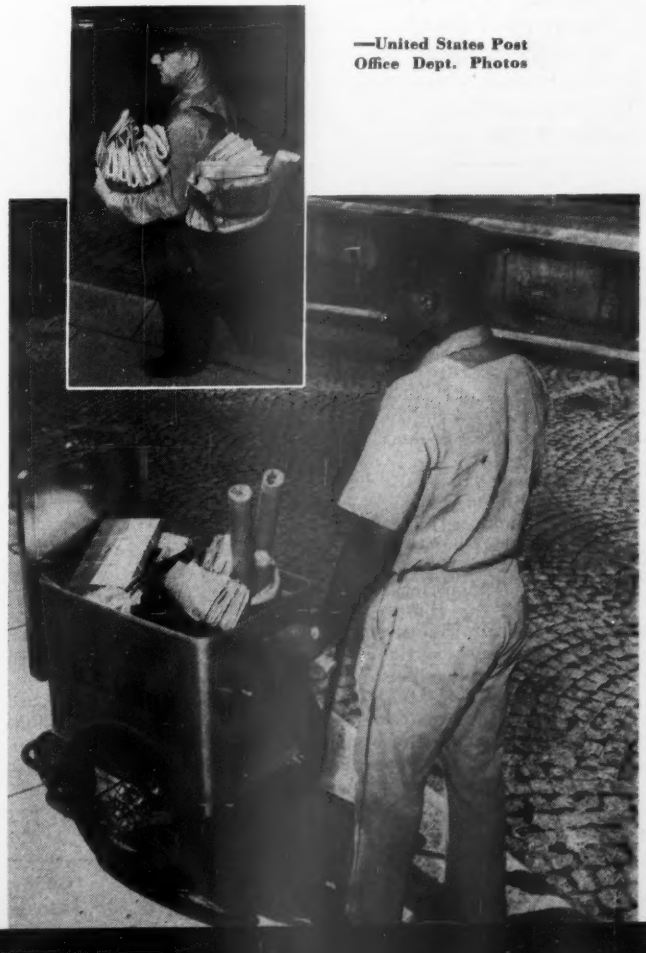
A surprising by-product is that Post Office decentralization is substantially strengthening our nation's civil defense. The end result is a country-wide organization for communications which is much more self-sufficient and less vulnerable than the former highly concentrated one.

While decentralization will strengthen management and improve service, major cost reduction in an organization that spends 75 cents out of every dollar on payroll—a payroll exceeding $1.8 billion per year—must come out of labor-saving devices and improved methods.

Following the recommendations of the Hoover Commission, a Research and Development Division was established in June, 1950, and given responsibility for concentrating on equipment development and methods improvement—functions that are commonplace in almost any privately owned industrial company of any size. But only $74,000 was appropriated to finance the program and, unfortunately, the Division did not develop beyond the level of a systems and procedures staff.

Steps were taken early in 1953 to stimulate action in this area. The Research and Development Division was reorganized as an Industrial Engineering Division and its efforts directed to the development of equipment in three areas which utilized the greatest manpower: (1) mail handling and conveying equipment; (2) letter facing, canceling, and sorting machines; and (3) functional vehicles for carriers.

As I see it, from an engineering viewpoint, the first area



—United States Post Office Dept. Photos

The photo at right pictures carrier with "caddy cart" which can be locked. Inset is of carrier shouldering typical load.

The Heller group also worked with the Federal Trade Commission. The Commission is shown above and includes Chairman Edward F. Howrey, center, and from r. to l., Commissioners Albert A. Carretta, Lowell B. Mason, James M. Mead, and John W. Gwynne.

is the least difficult. It requires only the allocation of sufficient funds and the adaptation and installation of equipment which is largely available.

The second area is technically the most difficult. Automatic facing and canceling machines are being developed to prototype stage. But basic research is necessary to develop a machine which will read and interpret printed or typed addressed letter mail. The costs of this development work may require an investment of $3 to $4 million. However, when fully developed, this equipment will expedite the processing of mail in the largest cities and, in my opinion, substantially reduce handling costs. The annual payroll for post office clerks is $800 million—a payroll cost that will inevitably go up as more pieces of mail are to be handled, unless ways are found to increase output.

The third area—the development of functional vehicles for mail carriers—will produce the results most obvious to the public. In the past, the Department relied largely on vendors to develop its new equipment. Now a testing ground has been established to develop with the manufacturers ideal specifications for vehicles for specific jobs.

Scientific methods are being used in analysis of the 70,000 carrier routes which cost $700 million each year. The first installation was made in Akron in July. It demonstrated that material savings can be made in present delivery and collection costs by revising city routes to uniform patterns and by using lightweight functional vehicles.

Major improvements and savings can also be made on rural routes. However, because of the growth character of the Post Office operation, increased efficiency does not necessarily mean loss of jobs to anyone. Through the first quarter of 1954, mail volume was running almost 5 per cent ahead of the same period a year ago.

Another engineering innovation undertaken by the Post Office Department in the past year is the application of work standards to mail handling and sorting operations in about 50 large post offices. This is giving management, for the first time, measurements of the performance of over 100,000 workers and a uniform yardstick for comparing the efficiency of offices.

Better management and improved operating methods made it possible for the Postmaster General to return to the Treasury Department close to $95 million from his appropriation for the fiscal year of 1954. This saving was over and above some $70 million which the Postmaster General had cut from the departmental budget before the fiscal year started. In addition to such tangible savings, the fiscal year which ended June 30, 1954, marked the first year since World War II in which the Post Office Department did not have to ask Congress for supplemental appropriations to cover unbudgeted deficits.

These are just a few examples of management improvement in action in only two Federal agencies. The movement is broad and vigorous. The government had been studied to death over the years, with little actual accomplishment registered, until Mr. Herbert Hoover lent his energies and sponsorship to the effort.

In the analytical work of the Hoover Commission, professional engineering consultants were of considerable assistance. They furnished specialized knowledge where needed. They were in position to view situations impartially, uncolored by tradition, politics, or personal interest. They were free to give their complete attention to selected major problem areas, document their findings, and adequately present their case. Their presence as consultants brought to the surface many good ideas that may have gone unheeded for years.

In the all-important follow-through on the brilliant work of the Hoover Commission, competent consultants have brought these same assets to the top management of the executive departments. And as temporary assistants, they have been used to stimulate action, to get things done quickly—in other words, to buy time.—***End.***

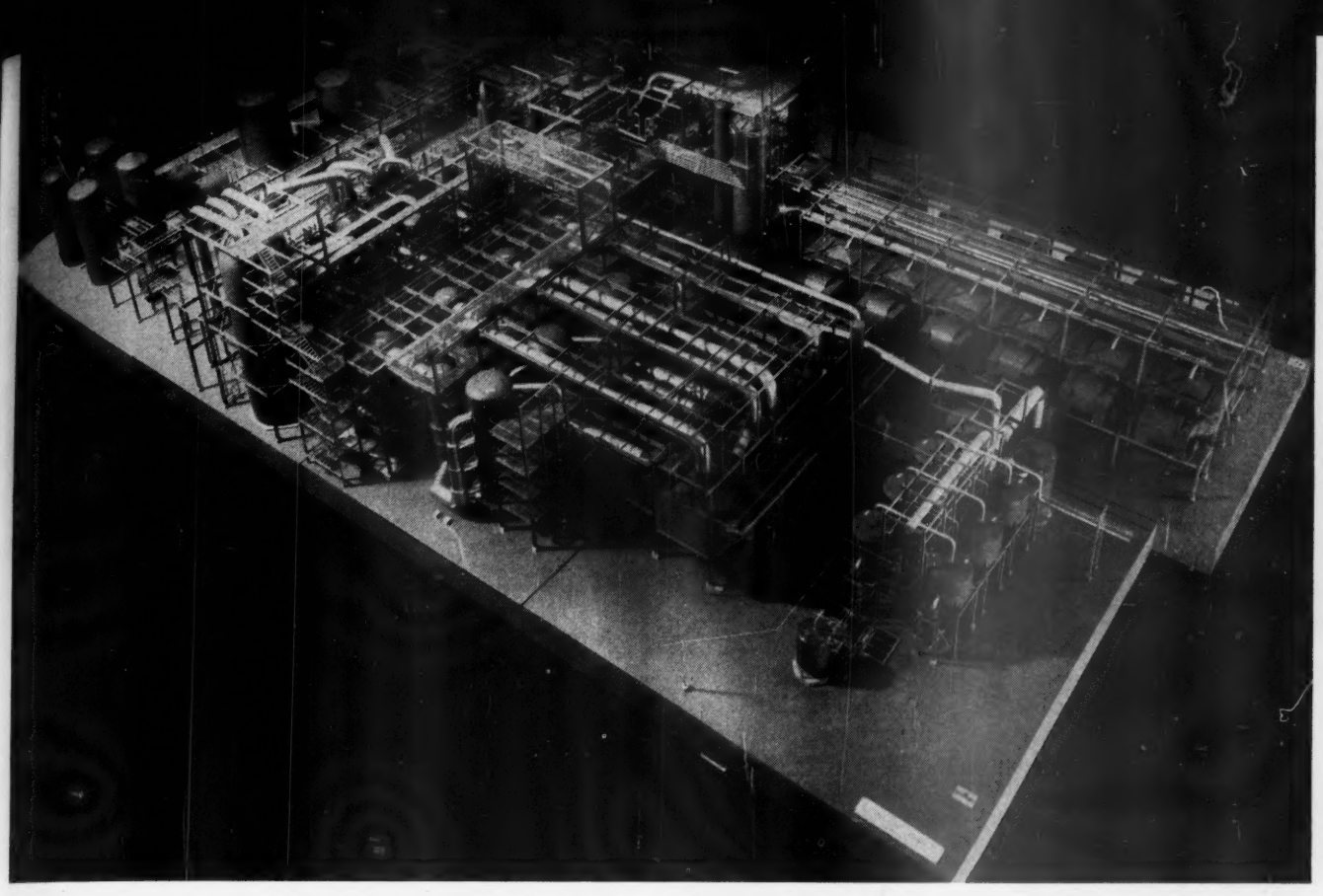
About the Author . . .

Mr. Heller

Robert Heller, a graduate of Harvard University, is head of Robert Heller & Associates, Cleveland, one of the largest management firms of its kind. His clients include many of the country's first 300 "blue-chip" corporations; and while his practice is basically industrial, Mr. Heller has also had extensive experience as a consultant to the legislative and executive branches of the U. S. Government.

His recommendations for the strengthening of the Congress, particularly in regard to committee functions, were incorporated into the Legislative Reorganization Act of 1946. He also participated in the work of the first Hoover Commission and is now a director of the Citizens Committee for the Hoover Report. His firm has been active in the functional reorganization of the Air Force, the Post Office and State Departments, and the Federal Trade Commission, and in developing the unification program for the Armed Forces.

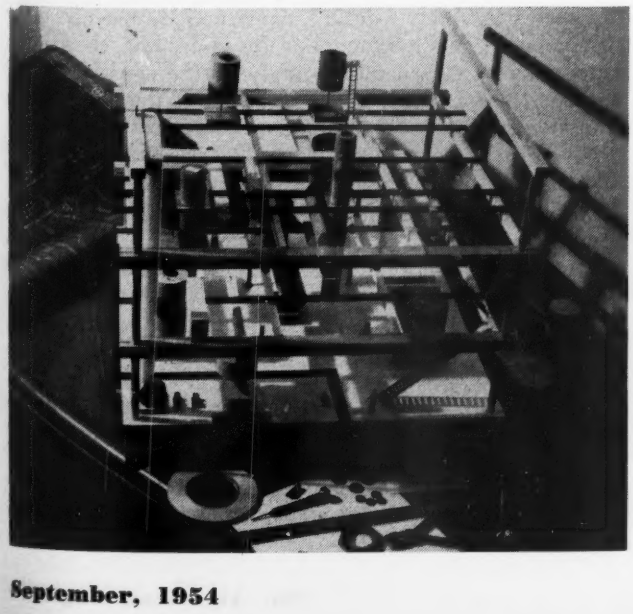
It has been said of Mr. Heller by a leading corporation's board chairman: "There would be very few serious misunderstandings between government and business if there were more people in business with his knowledge of government and more people in government with his knowledge of business."



Above is the completed model of Bakelite's Marietta, Ohio, phenol plant.

Engineering Models—

The Answer to Industrial Headaches



• *An American Engineer Photo Story* •

DECLARATIONS of war on design engineers by construction men in the field are fading away to a very faint echo from the past these days; the vice presidents in charge of finance are feeling a lot more friendly toward the engineering departments, too; and fewer sets of blueprints than ever before are being scrapped by irate supervisors and executives because of unfortunate errors. The reason for all this is a new tool—the engineering model—which is being used to solve monumental problems of design, construction, and even operations.

Only a decade ago scale models of industrial plants were mighty expensive toys, built from final drawings and having quite limited usefulness. Recently, however, engineers with design, construction, and operating experience have combined their know-how with that of the craftsmen to help develop the scale miniatures that have become practical, working tools which are put into use almost as soon as a new industrial building project is initiated.

One of the firms pioneering in this new field is Industrial Models, Inc., of Wilmington, Delaware, whose president is H. J. Bowen, a member of the Delaware Society of Professional Engineers. The company, which has supplied the pictures for this Photo Story, has built its ever-growing reputation on its ability to turn out complex industrial plant models in weeks rather than months as used to be the case.

Now, with this new technique, when the engineering

At the left is a preliminary model for a chemical process plant layout. All the features are completely adjustable, and the scale is one-fourth inch to one foot.

of a new plant is begun, it is possible to lick the bugaboos of layout, equipment placing, and—especially—piping by working the details out on the model rather than on paper. As one illustration, Industrial Models, Inc., reports that the normal procedure in the model design of chemical, process, oil, or power plants is to put around 90 per cent of the piping on the model *before* any final drawings are made. Then a design review is held with the plant operating and maintenance personnel. Revisions agreed upon during this conference are incorporated into the model, and only *then* are the final drawings made—a procedure that has been found to result in great savings in time and expense as well as in improved design quality.

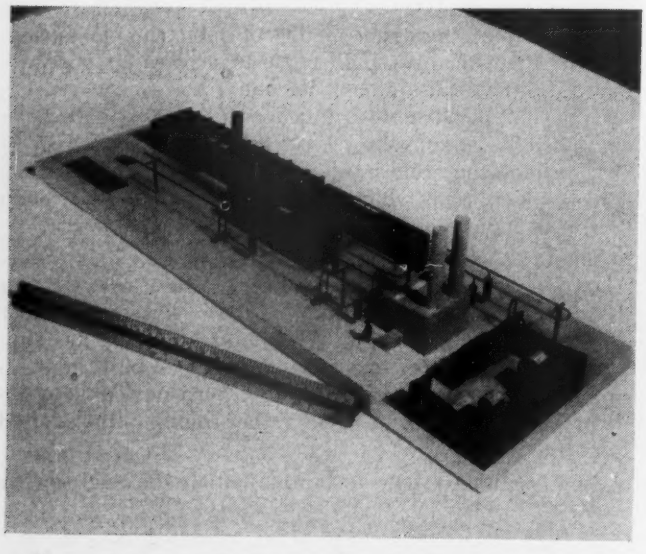
Actually the basic equipment model on which the piping is installed is preceded by at least one preliminary layout model, usually about one-fourth inch to one foot scale, which is used for the advance solution of general space, layout, equipment arrangement, and optimum steel structure questions.

To the basic equipment model, which is constructed quickly but with the utmost accuracy often on a somewhat larger scale than the preliminary model, are added not only the miniature pipe lines, but also representations of the valves, orifices, rotameters, steam traps, and funnels. In addition, conduit banks, instrument channels, windbracing, ventilation ducts, safety showers, auxiliary equipment, and so on are shown.

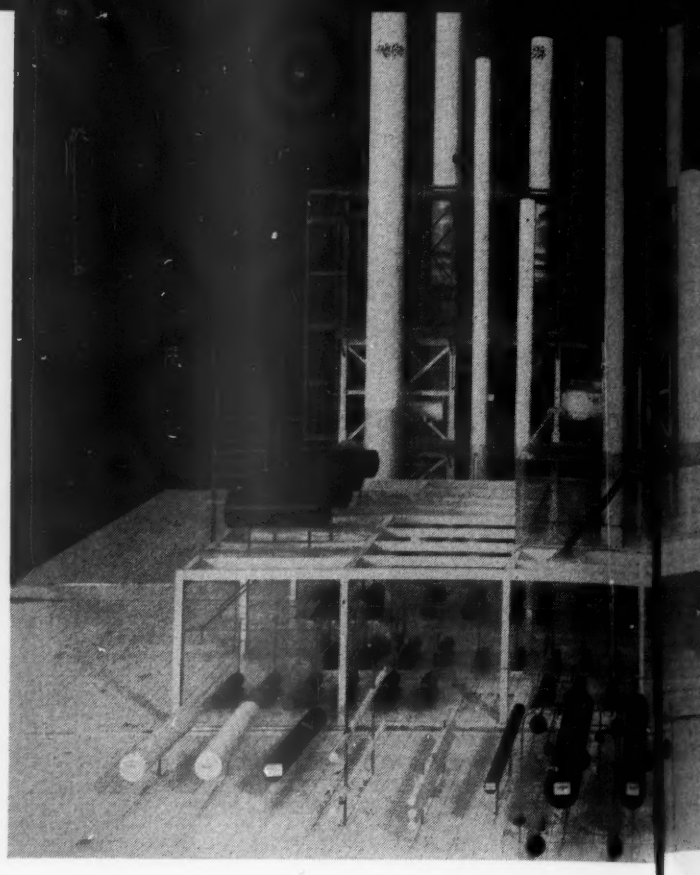
Such precision in the model is a guarantee against costly bottlenecks when it comes to the actual construction of the plant. It eliminates, for instance, such problems as interferences between steel beams and conduits that all too frequently do result from discrepancies between drawings or dimensional errors in design.

The model thus used by the design engineers is also very helpful to the construction forces as they plan and schedule their work. Color coding on the model indicates the areas and items of concern, for example, to the electricians, insulators, or instrument men. The scale model in the field gives every man a better picture of his particular job.

In addition, a number of firms have reported that they have found it useful to show the model plant when subcontracting bids are being let. Much more realistic bids are obtained when the bidders have had the opportunity to study the model, it is claimed, and the cost savings are thus considerable.



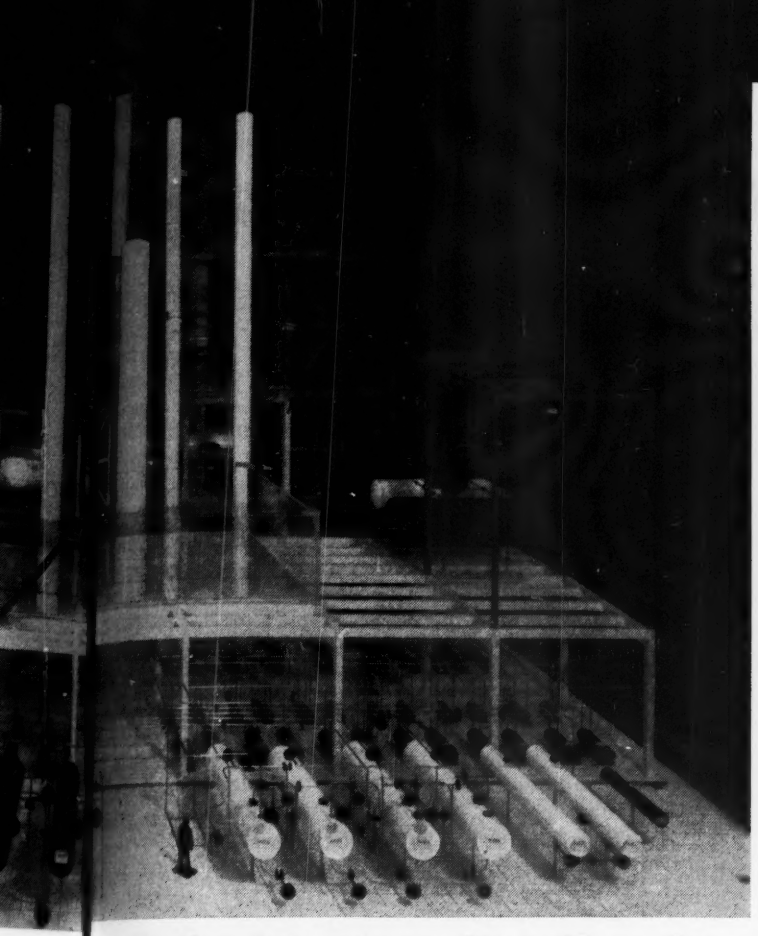
Above is a sample layout for the Ferro Corporation. The design of such a general layout often precedes the building of both the preliminary and basic equipment models.



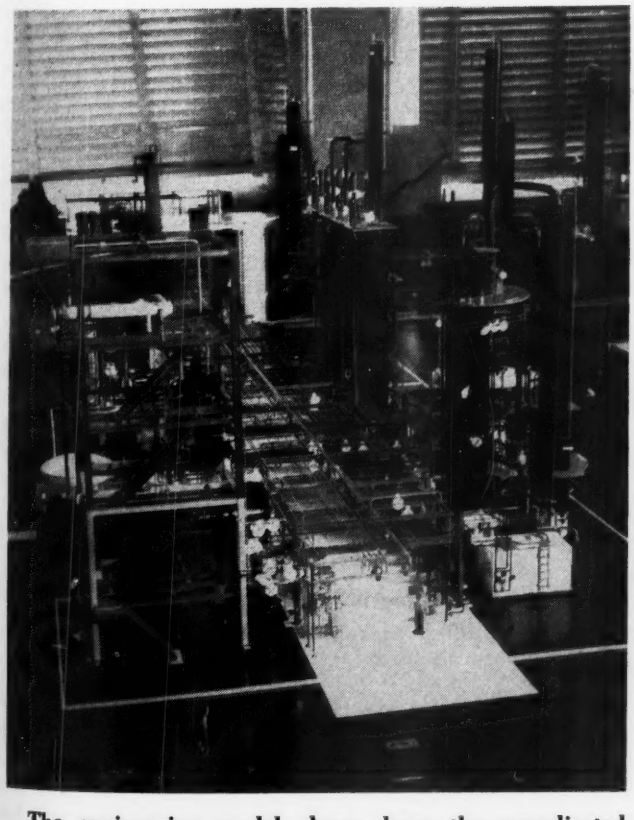
The advance training of operating personnel is also cited by a number of companies as still another use to which the industrial model may be put. The availability of the miniature of the plant for study by the persons who will actually be employed therein makes a certain degree of job orientation possible even before the actual construction of the facility is completed and the men go to work in earnest. It is pointed out, moreover, that operating personnel, viewing the model in advance, can often detect plant arrangements that could make their future work awkward, or possibly even unsafe.

The larger the project, the greater are the potential savings in every phase of its design, construction, and operation, through the use of the engineering models, claim the enthusiastic exponents of the new technique as they welcome more industrial converts to their ranks. There are a few who are more cautious, who point to some minor problems still to be ironed out by the infant industry. Such questions include the potential storage problem for the scale models or the problem of what to do when everybody—design, construction, and operating personnel—wants the model at the same time, though the latter may be solved quite simply by the construction of a second basic equipment model. And there are those who cite the fundamental human opposition to change as a stumbling block in the way of more universal acceptance of the model method of plant design.

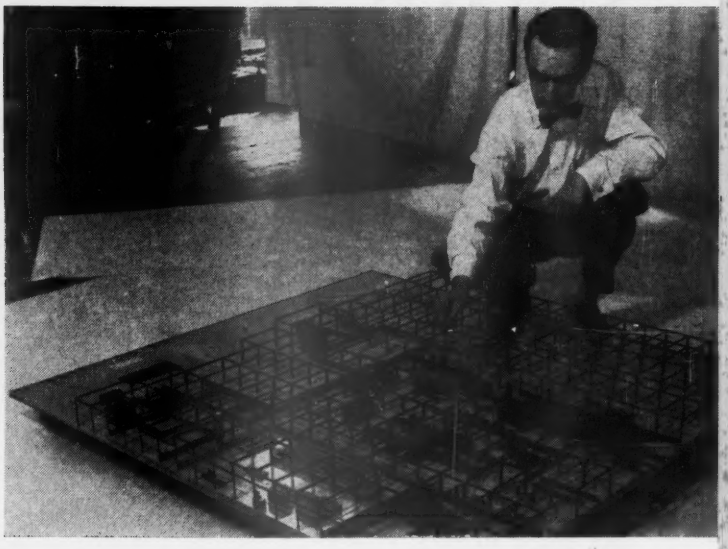
Nevertheless the fact that a few thousand dollars spent for an engineering model can prevent, and already has prevented for that matter, serious errors that add up to many, many times the price of the miniature is an overriding factor in favor of the new technique. It means, for one thing, that engineering know-how has found the answer to a major cost problem, and that is a matter of no small moment in this day of cost consciousness, industrial expansion, and complexity of operations. It is very much in the spirit of that broader application of engineering talent that has lately come to be termed "engineering economics" by some, or "executive engineering" by others.—***End.***



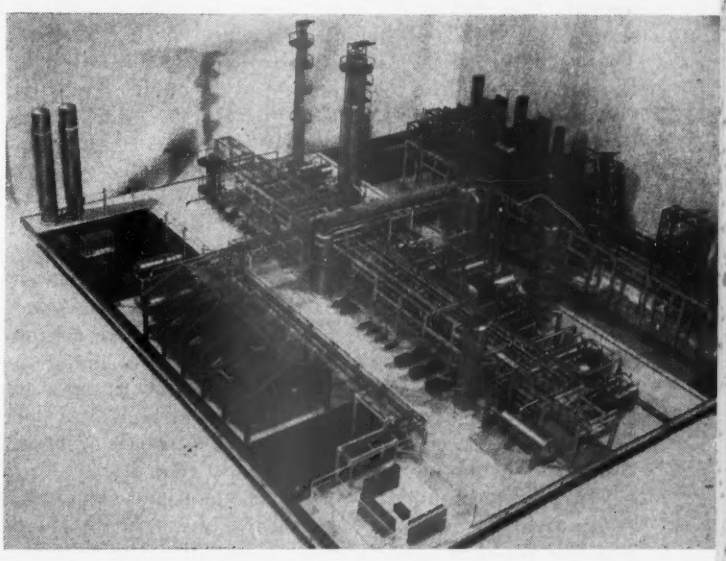
The above basic equipment plant model was photographed shortly after the work of installing the piping was begun. As the piping is added to the model it is easy to catch and correct any "interferences" that are not always apparent when designing is done on paper.



The engineering model above shows the complicated design of the Hercules Powder Company's Higgins Plant at Gibbstown, New Jersey.

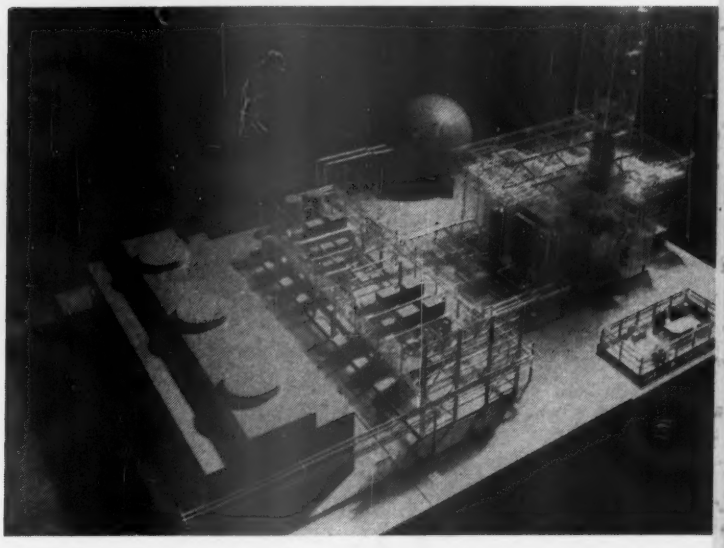


▲ Here an engineer looks over a complicated layout model of the Rheem Manufacturing Company's Chicago plant. On such a model design adjustments can be made until the final layout plans represent optimum efficiency in arrangements.



▲ Above is the model of a platformer designed for Standard Oil of Ohio. The ¼" to 1' miniature shows the complete piping design.

▼ Below is an unclassified photo of a full-scale piping model of a P-9 plant (heavy water) designed by Hydrocarbon Research, Inc., under an AEC contract.



N.S.P.E. Hqs. Building Near Reality

By Sidney L. Stolte, P.E., Chairman,

Advisors on Headquarters Housing Committee

"Moved by Delegate Peterson, seconded by Delegate McKee, that a Building Fund Committee be appointed. Carried." (Minutes of the Eighteenth Annual Meeting of the National Society of Professional Engineers, Tulsa, Oklahoma, June 7, 1952.)

This relatively simple, yet well-considered statement, was the very beginning of what will grow into a Headquarters Building of the National Society of Professional Engineers, located at 2029 K Street, Northwest, Washington, D. C.

The Building Fund Committee came back to the Daytona Beach Meeting, June 1953, with the following statement: "With ownership of a lot, it will be a reasonable assumption that after completion of plans for a 'non-speciality' building we can locally finance a building suitable for our requirements and on a twenty-year basis it appears that payments of all kinds on such a building should not equal the amount new office space will cost." These studies led the Board of Directors to authorize the Building Committee, with the approval of the Executive Committee, "to expend such monies as may be necessary for preliminary surveys and estimates and to option a piece of real property if they find it desirable and expedient to do so; and further, in the report to the Board Committee provide full information on indication of NSPE Headquarters requirements, costs of renting adequate space, costs of owning a building with comparable space, and plans for financing the proposed Headquarters Building." The preliminary report of the Building Committee further advised the Board of Directors, "the committee strongly favors building so as to be continually acquiring an increased equity plus the advantages of a permanent location, as well as relieving ourselves of being completely at the mercy of landlords in rented space."

This laid the foundation for a thorough and exhaustive study as to the feasibility of constructing a NSPE Headquarters Building. The Building Committee (later known as Advisors on Headquarters Housing) composed of a group of men, of which the author served as Chairman, represents a cross-section of the membership of the National Society: S. L. Stolte, P.E., Partner, Bettenburg, Townsend and Stolte, Architects and Engineers, St. Paul, Minnesota; R. B. Allen, P.E., Professor of Civil Engineering, University of Maryland; O. H. Beasley, P.E., President, Beasley and Beasley, Inc., Consulting Engineers, Washington, D. C.; Howard T. Tellepsen, P. E., President, Tellepsen Construction Co., Houston, Texas.

NSPE Space Requirements

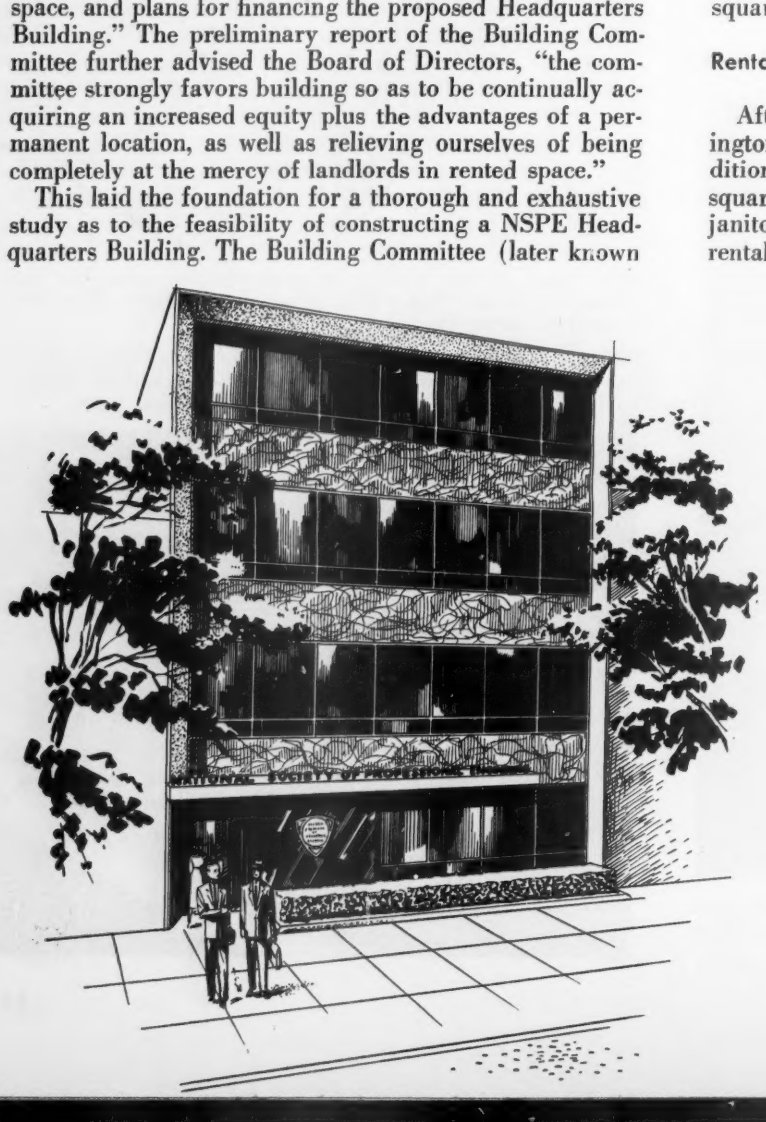
Present—The Advisors estimated that there is an immediate need of 4,400 square feet net to adequately house headquarters operations. The present headquarters at 1121 Fifteenth Street, N.W., contains about 2,500 square feet net. For the past several months, the Editorial Department of the American Engineer has been occupying an additional 1,000 square feet of office space in a building about a block from the Headquarters Office.

Five Years Hence—It is estimated that the National Society will need 6,000 square feet of office space five years from now. This is based on the continuing expansion of the Society and the experience of the last five years in terms of expanded programs and activities.

Ten Years Hence—Anticipating a continued growth for ten years, it is estimated that between 8,000 and 10,000 square feet of floor space will be needed by 1964.

Rental Property

After a careful review of the available rentals in Washington, the Advisors found that acceptable and air-conditioned office space ranged from $4.00 to $5.35 per square foot per year. These prices usually include all janitorial service, heat, light and other facilities, and rental covers only usable square footage. Assuming that



This artist's sketch of the proposed NSPE Headquarters Building in Washington, D. C., gives a good idea of the physical appearance of the future home. It is to be located in the downtown area of the Capitol in a rapidly developing section.

NSPE could obtain suitable rental space at a price of $4.25 per square foot it would cost $18,700 per year for rent at the present time; $25,500 per year five years hence; and $34,000 to $42,500 per year ten years hence—providing that it would be possible to obtain rental space where NSPE could be assured of adequate room for expansion. A three or four-story structure of NSPE's would provide from $7,500 to $18,000 rental per year, which could be applied to amortize the building cost, thereby reducing the annual operating cost of the proposed building of approximately $30,000 by a like amount. Furthermore, at the end of twenty years NSPE would have paid out in rental fees more than $500,000 with nothing to evidence this expenditure except useable office space for twenty years, whereas, if NSPE constructed it's own Headquarters Building and rented the 3rd and/or 4th floors it would have established an equity of approximately $200,000. This figure allows for 2½% per year depreciation of the building with no appreciation in site value and it is the conviction of the Advisors that the building depreciation would be offset by impending property value increase in this location.

Financing The Headquarters Building

On the basis of the searching report of the Advisors, the Board of Directors at the Indianapolis Meeting, November 1953, moved "that the President and Secretary be authorized and instructed to build at 2029 K Street, N.W., Washington, D. C., a building. . . .". They went on to state, "that the officers be authorized to finance the construction project at a rate of interest not to exceed 4½%, and that a first offering be made to the members of the Society in denominations to be fixed by the Executive Committee before any mortgage is executed."

This action of the Board brought forth President Shoch's letter of July 28, 1954, requesting from the membership "an expression of interest" to assist the Society in making its final decision for financing the Headquarters Building. As was pointed out in President Shoch's letter, preliminary discussions indicated that private financing would be available to the Society at an interest rate of 4½% per annum. However, to absorb the costs of mailing fees, registration fees, legal fees, etc., which would be incurred through membership financing it was determined to offer the securities to the membership at an interest rate of 4% per annum, as evidenced by the action of the Board at the Albuquerque Meeting, February 1954, when it was moved "that the officers of NSPE be authorized to issue debentures carrying an interest rate of four per cent. . . ."

The survey showed an overwhelming opinion that the members, like the officers of the Society, believed that each member should have an opportunity to participate in financing his National Society Headquarters Building. Members indicated in their response to the President's letter that they would be willing to purchase over $900,000 of securities which is much more than sufficient to cover the costs.

General Description of Building

The Society has engaged the services of LAWRIE (Ritchie Lawrie, Jr., Past President of NSPE) & GREEN, Architects & Engineers, Harrisburg, Pennsylvania, to draw plans and supervise the construction. The building will be an air-conditioned, elevator, three- or four-story and basement structure with limited parking facilities in the basement. The first two floors will contain approximately 3,800 square feet. Current plans call for NSPE occupying the first two floors, with the additional space being made available for rental to other engineering or professional organizations. The basement would be available for expansion of NSPE facilities when needed. The lot is 40 feet wide, dropping off at the rear to an alley. Ground area is approximately 4,167 square feet.

Rental Prospects

Several engineering organizations have expressed a desire to rent space in the NSPE Headquarters Building. We do not expect to encounter any difficulty in renting space that will not be immediately required for the operations of NSPE. Much consideration was given to this possibility, as the financial assistance that would be afforded NSPE in amortizing the cost of the building by renting this additional space would be of paramount importance.

Nature of the Securities

Plans are going forward to offer "Participation Certificates" to finance the cost of the building only to members of the Society, including its State and Chapter affiliates and these will be issued in $100 denominations bearing interest at the rate of 4% per annum; payable annually, having a maturity date of twenty years. Sinking fund and redemption privileges will be provided. The Certificates, both as regards to the payment of principal and interest, will be a general obligation of the Society, guaranteed by the full faith and credit of the National Society of Professional Engineers. They will not constitute a lien or encumbrance on any specific asset or upon its property as a whole.

A brochure and prospectus setting forth the specifics of the certificates and full information concerning your National Society of Professional Engineers Building will be circularized to the entire membership in the near future.

Members should read this material carefully for full details and information as this will constitute the basis on which the certificates will be offered.—*End.*

CONGRATULATIONS!

The prompt and enthusiastic response of the members to our recent plea for an expression of the degree of their interest in financing our Headquarters Building is a dramatic demonstration of the minute-man effectiveness which characterizes NSPE. That the response was overwhelmingly in favor of membership participation is added proof of the ready support which awaits those activities and projects selected and developed in accordance with the members' concept of true professional engineer interest.

Chairman Stolte and his Headquarters Advisors have used commendable restraint in the face of sudden wealth in retaining the original perspective of a building which meets our long-range needs and assured income. Their recommendation, approved by the Executive Committee and ready for finalizing, is being passed on to the Board in the same constructive spirit.

The Directors and Officers alike now have an acute sense of the members' keen awareness and proprietary interest in the affairs of the Society. For this reason particularly I say, all around—Congratulations!

Clarence T. Shoch, P.E.
President, NSPE

The Big Picture . . .

Registration: Then, Now and Tomorrow

By Frank H. Prouty, P.E.,
Chairman, National Bureau of Engineering Registration

To a state legislature, engineering registration is a means of protecting the life, health and property of the public. Legal registration permits only those engineers who can safely serve the public to practice and denies such responsibility to those who are incompetent.

To engineers, registration also represents a struggle to obtain professional recognition. Lawyers and doctors are now 100 per cent registered and they constitute the definition of "professional recognition." You can't prescribe medicine or perform an operation unless you are a registered physician and you can't even draw a will for someone else unless you have passed the bar examination.

It was not always thus. Once kings appointed physicians and not too long ago a judge could examine an applicant in open court and admit him to the bar.

Once engineering was classed as just a guild and surveying as a trade. The first engineering diplomas were products of inadequate text books and untrained instructors and the best thing a new college graduate could do was to apprentice himself to a graduate of the school of hard knocks. His first assignment was usually to try to forget what he had learned in college.

Then came better text books, better trained professors and engineering registration laws. Today the status of an engineer passed by a state examining board is raised to a professional level. The organization which limits its membership to registered engineers has a perfect right to call itself, "The National Society of Professional Engineers." If every engineer capable of registration would register and if everyone so registered would join this National Society, then the engineers could acquire a society with full professional status. Public acknowledgement of such status would automatically accompany membership in such a society.

Several seemingly insurmountable obstacles delay fulfillment of this ideal:

1. Subordinates of a registered engineer are not required to register. In an office of several hundred engineers, it could be possible to comply with the law by having only the chief engineer registered.
2. Officers and employees of the U. S., while performing government service, are not required to register. This rule actually exempts many thousands of engineers fully qualified for registration.
3. Registered engineers cannot be compelled to join any particular national professional engineering organization. Many already hold membership in one or several of the "Founder" Societies, or in other strong technical organizations. It is doubtful whether a really high percentage could be induced to join a single additional organization.

Actually only 50 per cent of those qualified for registration are now registered and only 20 per cent of those registered now belong to NSPE.

The regulation of trades and professions is reserved under the Constitution for the states themselves. The states apply this authority through so-called "police power."

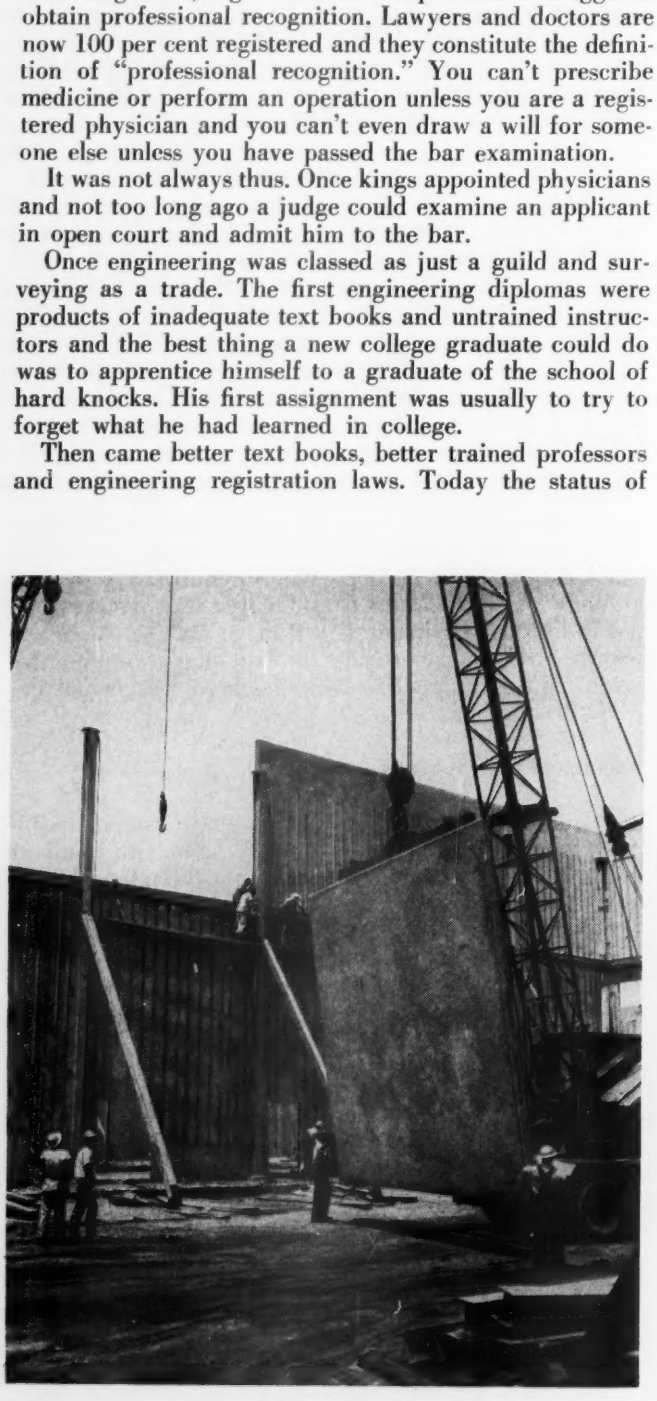
States are restricted under the Constitution from passing laws which deprive a person of life, liberty, property or even the pursuit of happiness, without due process of law. We notice the reference is always to "pursuit" of happiness. If the law could only guarantee this mythical state of happiness instead of its pursuit! An engineer can take pleasure in his work and, comparatively speaking, he is happy, but an engineer cannot rest satisfied with things as they are. "Not to go forward is to go backward." As General Electric says, "Better things, for more people at lower prices," must always remain the engineer's unsatisfied goal.

It is not like the dissatisfaction between father and son when the dad said:

"Why is it you are always wishing for something you haven't got?"

"Well, dad," said the son, "what else is there to wish for?"

A state is permitted to enact laws pertaining to public welfare, public health and public safety. The enforcement of such laws falls under the "police power" of the state. Engineering registration is enforceable only under such powers. Under "police powers" a state can force an



Registration was needed to protect the public welfare.

individual to observe any law protecting the public health or safety. The privileges of an individual end where they begin to violate public welfare.

COURTS have agreed that the design of buildings, water systems, sewage disposal plants, electrical systems, heating plants, etc., involve public health and safety and justify the requirement of registration for those responsible for such design.

"Police power" also helps boards collect renewal fees. An engineer's current ability is not measured by whether or not he has paid his current fees, but fees are necessary to maintain an examining board in operation and under "police powers" a man can be prevented from practicing unless he has paid his dues.

Since only engineers are competent to judge engineering ability, the courts here approved the issuing of certificates of registration by an examining board set up by the state itself and composed entirely of engineers.

Most registration laws protect the public against a deceptive use of the term "engineer" and also against any unauthorized "practice of engineering." However, there are glaring exceptions to such laws. Several states place no restriction on the use of the title "engineer" so long as no engineering practice is involved and contrariwise the State of California permits unlimited practice of engineering (in all branches but civil and structural) so long as the individual does not call himself an "engineer"—uniformity still has far to go.

Several state supreme courts have rendered decisions declaring portions of various state engineering laws unconstitutional, but no state supreme court has ever declared the principal of engineering registration unconstitutional. Any law depending on "police powers" for existence is subject to numerous constitutional challenges. Probably not one of our forty-eight states has an engineering registration law that would not be declared unconstitutional, in part, by at least one of our various state supreme courts.

Any law is what the United States Supreme Court says it is. Since there is little likelihood of an engineering registration law being challenged through to the United States Supreme Court, each state registration law becomes what the supreme court of that state says it is. This fact makes each state an entity in itself and makes uniformity between states practically impossible. This conflict is also a definite restriction to national reciprocity. One court will say you may not designate branches of engineering unless the legislature defines each branch in the law itself. Other state courts approve branches without legislative definition. Most courts will permit Engineers Council for Professional Development accrediting but the Colorado Supreme Court declares it an illegal delegation of authority.

With general regard to engineering registration a voice from the wilderness has always cried out for "National Registration." Since registration is administered under local "police powers" and since "police powers" are state reserved and differ in each individual state there can be no "National Registration Law."

We do have a National Certificate issued by the National Council of State Boards of Engineering Examiners, for a fee of thirty-five dollars. Since the National Council is advisory only and has no actual power within the confines of any state, this certificate becomes a verified account of an engineer's education and experience as confirmed by colleges and at least five registered engineers. The verification is secured by the National Secretary of the Council and no application is accepted unless the engineer is first registered in his home state.

IF a registered engineer expects to cross multiple state lines, this service avoids duplication of effort and the embarrassment of requesting references to send in the same endorsement over and over again. Photostatic copies of confidential reference replies and of educational records will be sent directly to any state examining board for an additional sum of five dollars.

The excellent reception given this National Certificate is attested by the fact that 85 per cent of all state boards give at least partial acceptance to such a certificate. Since the requirements for a National Certificate are higher than those in the Model Law, some states grant full registration to anyone holding a National Certificate.

As amongst states, there can be a concentrated national effort to obtain uniformity. The necessity for such uniformity was recognized by the civil engineers as far back as 1911, when only three states had engineering laws. The civils prepared the first Model Law as a necessary evil with the thought that since the movement was started and other states might adopt engineering registration laws, such laws should be uniform. Strangely enough, the majority of the civils were still against registration and their Society wasn't permitted to recommend adoption of its own Model Law.

There has never been a time since 1911 that national engineering organizations have not had committees working on a Model Law. New and often conflicting Model Laws were developed at various intervals and with various degrees of apathy from a profession not yet solidly behind engineering registration.

Many older established individual engineers resented it as regimentation and many chemical engineers, electrical engineers, and particularly mining engineers looked upon registration as unnecessary, expensive and restrictive. Only the civil engineers, with their structural steel and reinforced concrete design work in connection with buildings, began to fully realize the importance and necessity of protecting the public by keeping out the incompetent through engineering registration laws.

It was not until 1944, when the architects of Illinois financed legal action against the Illinois engineers thereby obtaining a state supreme court decision declaring the existing state engineering law unconstitutional, that all engineers combined into one fighting unit. The fact that most of the sections of the Illinois law declared unconstitutional had been copied verbatim from the Model Law gave rise to the fear that the entire engineers' registration movement might be threatened. With such a threat past,

(*Please turn to page* 34)

About the Author . . .

Mr. Prouty

Frank H. Prouty is a prominent consulting engineer of Denver, Colorado. He holds B.S. (C.E.), M.E., and D. Sc. degrees in engineering from the University of Colorado. He is chairman of the National Bureau of Engineering Registration and of the Colorado State Board of Engineering Examiners.

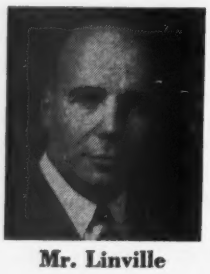
Prior to going into the consulting field, Mr. Prouty was associated with the Bethlehem Steel Company. He is noted as a designer of numerous power plants. As an expert on utility rates, he has appeared before many courts and commissions.

A member of NSPE, Mr. Prouty is also a fellow and past national vice president of the American Society of Mechanical Engineers, a past president of the Colorado Society of Engineers, and a member of the Colorado Engineering Council and the Colorado Section of the American Society of Appraisers.

Statements in the Matter of Corporate Practice of Engineering in New York State

An organization, known as the Committee on Engineering Laws (CEL), representing a special group of corporations, is attempting to change the New York Education Law on the practice of professional engineering by corporations.

Seventeen months have elapsed since this became known to NYSSPE, when CEL notified NYSSPE on February 5, 1953, that a bill would be introduced in the Legislature on February 8, 1953.



Mr. Linville

In an emergency meeting, NYSSPE moved to oppose the bill, if introduced, because (1) it allowed temporary corporations of any character, to register and practice professional engineering; (2) the State Board of Engineering Examiners did not examine the corporations or do the registering; (3) it did not meet the problem of many corporations outside of the CEL group; (4) it placed engineering employees in a non-professional category, apart from management, and strengthened collective bargaining.

The bill "died" in the committees of the Legislature, and was re-introduced eleven months later, over appeals from NYSSPE for patience on the part of CEL. NYSSPE was forced again to decide in an emergency meeting of the Board of Directors to oppose the bill. Amendments were made by CEL twice after its second introduction, but the bill failed again to receive action by either house of the Legislature.

Nineteen months is not long for the "machinery" of a Society such as ours, to determine the answers to the problems of corporations doing business involving engineering in New York State, not only the corporations of the CEL group, but many others. We have diligently worked at this, and expect our Board to act on an NYSSPE bill on September 10, 1954. We believe that this bill will meet the proper interests of the public, the Profession, the Society, CEL, corporations in general, other engineering and business organizations, and our sister professional societies in architecture, law, medicine, dentistry, and public accounting.

We are assured that the NYSSPE Bill will be printed in the AMERICAN ENGINEER for all to read and understand.

The NYSSPE official position has been limited entirely to opposition to specific CEL bills when before the Legislature. This Society has not been opposed to anything at any time other than a specific bill. The Society's action has been a struggle for time to get a right solution to a problem of many facets.

We regret that the name of NSPE has been used against us by CEL in a recent letter (of June 24, 1954) for general distribution. This letter says that the position of NYSSPE has not been supported by NSPE. This implies, of course, that NSPE opposes the position of NYSSPE. We are certain that NSPE has taken no action to date to strengthen or weaken the position of NYSSPE. Therefore, we are at a loss to understand why CEL or any individual has felt free to use the NSPE name in this way or would do so.

We are hopeful and confident that the official action of NYSSPE will bring credit and respect to the Profession, to the New York State Society, and to NSPE. We are confident that nothing heretofore done officially has been a discredit except in the minds of those who have not been fully informed. — T. M. LINVILLE, P.E., *President, NYSSPE.*

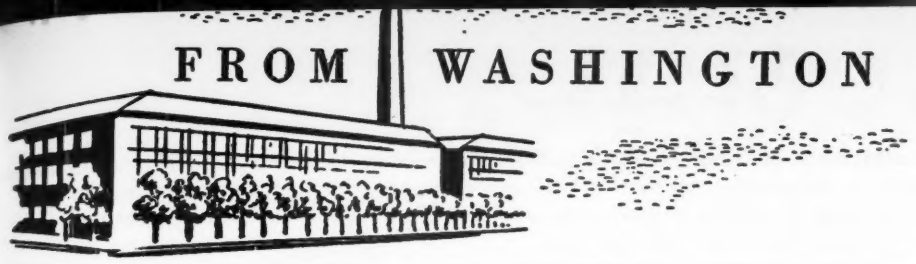
I welcome the forthright statement printed above by President Linville of the New York State Society and I am particularly pleased with his report of the progress being made by our New York members toward a proper determination of legislation in that state affecting the practice of professional engineering by corporations. Mr. Linville indicates that the NYSSPE's considerations take into account the interests of all affected, including the corporations. This is a fine, constructive attitude.

Mr. Shoch

It is to be regretted that some of the publicity released in connection with this controversy between the Committee on Engineering Laws and the New York State Society stated that NSPE "has not supported the position taken by the New York State Society—." Actually, NSPE has taken no action in regard to the bills on corporate practice introduced in the New York Legislature. The current status of this matter in NSPE is that it has been referred to the Engineering Practices Committee for study and report. Therefore, at the moment no one is authorized or free to use the name of NSPE in a way that would lead to the belief that NSPE has taken any position. Most certainly it is unfair to imply that NSPE is opposed to the position of its member State Society.

While the specific action in New York State is somewhat local, the general problem is nation-wide and for that reason NSPE admits to considerable interest and concern. Therefore, we are watching developments in New York with the hope that our members in that state and the corporations as well, will arrive at a wise and effective treatment.

—Clarence T. Shoch, P. E.,
President, N.S.P.E.



By
Milton F. Lunch,
N.S.P.E.'s Legislative Analyst

NEW CONGRESS FACES TECNICAL MANPOWER PROBLEMS

With the adjournment of the 83rd Congress, the national defense-manpower problem, which directly involves engineers and other specialized personnel, was left on the shelf of unfinished business.

Nevertheless, 1954 will have been a significant year in this area of interest because it witnessed some high-level rumblings of discontent with the relationship of engineers, scientists and others to the over-all national defense situation and some high-level promises that action will occur next year.

It may be profitable to note some of the developments of recent months and thus lay the background for some of the anticipated debates and decisions by the 84th Congress.

Probably the most publicized development was the unveiling in June of the Defense Department's new thinking on the organization and size of the military reserve. Dr. John A. Hannah, then Assistant Secretary of Defense for Manpower and Personnel, (now returned to his former post as President of Michigan State College) revealed to a conference of defense leaders that the Pentagon plans to build a combat-ready reserve of 3,000,000 men through a modified form of universal military training, with compulsory active reserve service following a period of full active duty.

It has long been recognized that the nation is rapidly moving toward a defense organization under which almost all able-bodied men in the younger age brackets will be subject to immediate recall to military duty. It has likewise long been observed that such a situation has grave implications to defense research, development and production. A somewhat dramatic (and admittedly exceptional) situation to illustrate the problem is given in a recent issue of Chemical and Engineering News, published by the American Chemical Society. The case involved a firm which contracted to work on jet engines solely because of the availability of an exceptionally capable and especially trained engineer. After two deferments the man was inducted into the military service and the defense prcject was abandoned because that particular engineer was irreplaceable. Other less dramatic instances have also demonstrated that the problem of the proper place of the scientist and engineer in the defense picture relates to the now-accepted theory of "equality of sacrifice" versus specialized needs for specialized personnel.

The new Pentagon plan proposes to approach this problem by recognizing two forms of reserve organization—the Service Callable Reserve, composed of the First Line Reserve and Auxiliary Reserve, and the Selectively Callable Reserve. According to Dr. Hannah this second group "would represent a pool of men with prior service whose special talents, abilities, and experiences might be needed by the services in the course of expanding the armed forces to meet an emergency. All men with actual combat experience will be released directly to the Selectively Callable Reserve but consistent with requirements of the Service Callable Reserve." What does this language mean to the role of the specialized personnel? Dr. Hannah says that one of the great strengths of the plan is that ". . . it provides for an improved method of allocating manpower having critical skills between military and essential civilian activities. Local civilian determination would be made of whether the recall to duty of a man in the 'Selectively Callable Reserve' would interfere with essential civilian activities."

This appears to be an acceptance of the principle of the Appley Report (American Engineer, March, 1954) which proposed to let the local Selective Service boards weigh the relative value of an engineer or scientist in uniform or in civilian defense operations and make the decision on his military recall.

(Please turn the page)

(From previous page)

Despite Dr. Hannah's statement, it is not at all clear that the military leaders are willing to relinquish military control over a substantial portion of the reserve forces, nor is it clear that legislation to make such a drastic change in military organization would not invite open or hidden opposition by the armed services.

The new proposed plan does not yet have official administration blessing, but its exact status is not clear. Shortly after the Hannah speech the White House said that his remarks did "not reflect fully the attitude of the National Security Council," and the entire manpower problem was still under study. The White House statement said that the Office of Defense Mobilization and the Department of Defense are charged with the development of a specific program and a report is to be submitted to the National Security Council in September. Secretary of Defense Charles E. Wilson is apparently backing the Hannah plan, however. He termed the present reserve situation "a scandal very disturbing to the American people" if the nation had to go to war now. He claims that the administration has approved the plan "in a broad sense."

In a letter to Senator Leverett Saltonstall of Massachusetts, chairman of the Senate Armed Services Committee, President Eisenhower has promised that a new reserve plan will be submitted to the 84th Congress in January as "a top priority item" for his next legislative program.

"Equality of Sacrifice"

The basic underlying issue affecting specialized personnel, when stripped of administrative technicalities and details, is whether the nation should continue the "equality of sacrifice" philosophy or recognize that the national interest might better be served in some cases by keeping specialists in civilian supporting activities. Major General Lewis B. Hershey, Director of the Selective Service System, has put his finger on that very issue in a recent letter to an unnamed scientific organization which had written him "that certain individuals practicing these and other professions can make greater contributions to national safety and well-being in civilian assignments than in the military forces."

The long-time Selective Service head replied:

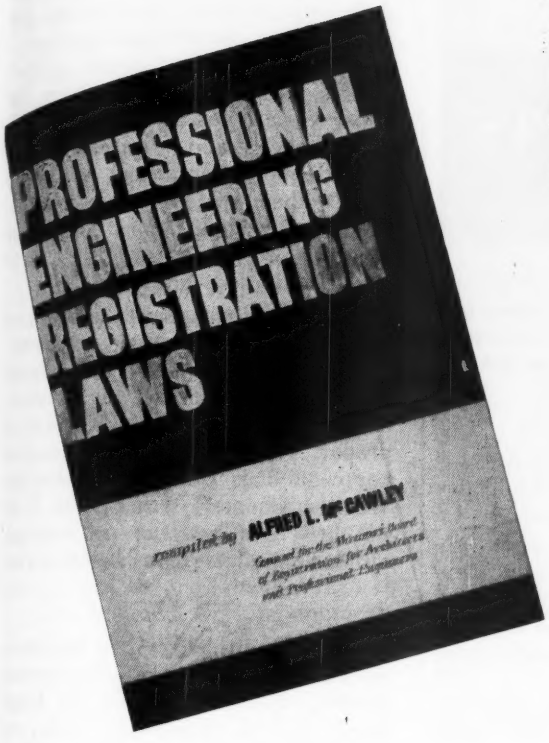
"This statement is a claim for exemption for certain individual registrants. . . . It is always a matter of regret that interested groups, in their hopes, think of the law as they would wish it to be rather than as it is. . . . I cannot believe exemption . . . is either necessary or advisable, but in all sincerity if exemption is what the . . . (name of organization) believe is necessary for the safety of this nation, they should say so and request from Congress legislation which would authorize these exemptions."

The editorial voice of the New York Times has been raised in support of a departure from the "equality of sacrifice" theory by stating: "The survival of this country depends in great part upon how well we do in the unceasing technological competition with the Soviet Union and its allies. Only a week ago an Assistant Secretary of Defense (Donald A. Quarles, Assistant Secretary for Research and Development and former president, AIEE) warned us gravely that our technological edge is being reduced seriously. In this situation can there be a more inexcusable waste of resources than to subject a brilliant young scientist or engineer to military duty unrelated to the technological defense of this country. The concept of equality of sacrifice must yield to the basic security needs of our nation."

The president of the National Association of Manufacturers, Harold C. McClellan, has declared that NAM believes ". . . in the equality of sacrifice, but we recognize that many individuals have made vastly greater contributions to their country as scientists or engineers working in research and development departments of industry than they could have made if assigned to the armed forces where their technical capabilities would not have been used to the fullest extent."

Thus, the real issue is being shaped. It must be recognized that the claim for some form of special treatment of scientists and engineers has serious political implications; that members of Congress, ever sensitive to claims of discriminatory legislation, will be understandably reluctant to overlook that body of public opinion which insists that the man next door must carry a gun "if my Johnny has to carry a gun." If the special treatment viewpoint is to prevail a great public relations responsibility devolves upon those organizations which seek it. They must make it crystal clear that the so-called "favoritism" is justified on the basis of what is best for the national defense, not what is best for the individuals in the select group.

HERE IT IS . . .



At long last, a compendium of Registration Laws for Professional Engineers in all 48 States, Alaska, Hawaii, Puerto Rico, and the District of Columbia.

This is a book that belongs on the shelf of every professional engineer's reference library. Compiled by a recognized authority in the field of professional registration, the book presents, state by state, the exact legal requirements that must be met for professional practice. This unique volume covers in detail such elements of the state laws as temporary permits, fees and bonds, the filing of maps, certificate applications, education requirements, examinations, and public works projects. The laws are cited for reciprocity, registration renewals, corporate and partnership practice, revocation of registration, and violations and penalties.

Don't Miss This Pre-Publication Offer

Until Oct. 1

$5.

Then $8.75

Because of NSPE's early and continuing interest in the field of registration for professional engineers, the National Society is making pre-publication copies of this valuable book available to members at a special price of $5. *After October 1st, the cost of the book will be $8.75.* Take advantage NOW of this big saving. This is a book for the consulting engineer, and the engineer in industry, government and education. Engineering students and EIT's will find it especially valuable.

WHAT OTHERS SAY . . .

"Within these covers will be found answers to numerous questions that have been asked by State Boards of Engineering Examiners, by member State Societies of the National Society of Professional Engineers, and by many individuals regarding registration laws. In the preparation of this Compendium, the author has been most painstaking . . ."

—T. Carr Forrest, Jr., P.E.,
Forrest & Cotton
Consulting Engineers
Dallas, Tex.

"I believe as each engineer uses this book, he will realize the vast amount of research and work that was necessary in its preparation. He will further realize the importance of this information to himself as an engineer, and also to the engineering profession as a whole, and be forever grateful to the man with vision to prepare it."

—C. G. Roush, P.E.,
Manager, Westinghouse Electric Corp.,
Kansas City, Mo.

"In this volume one may readily find the desired information concerning any engineering registration law. Moreover, he will in a very short time acquire a better knowledge and higher appreciation of the objects and purposes of registration of professional engineers."

—C. Y. Thomas, P.E.,
Vice President of
Spencer Chemical Co.,

The Author

Alfred L. McCawley, a Missouri State Senator for many years, is the author of numerous published articles on professional registration for engineers and architects. A sponsor of the Missouri securities law, he is counsel for that State's Board of Registration for Architects and Professional Engineers. His legal career dates back to 1900, when he was admitted to the Missouri Bar.

USE THIS COUPON
TO TAKE ADVANTAGE
OF
NSPE's PRE-PUBLICATION OFFER
—For Members Only—

A. L. McCAWLEY
Trustee, Publications Fund
Box 474
Jefferson City, Missouri

Dear Sir:

I enclose (check) (money order) in the amount of $..... for ..... cop ..... of *Professional Engineering Registration Laws.* I understand that I am to receive this book valued at $8.75 per copy at the pre-publication price of $5.00 each.

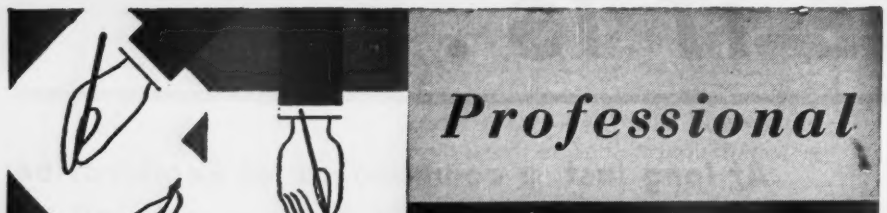
Ship to (please print):

Name .....

Street .....

City ..... *State* .....

(Make checks payable to: A. L. McCawley, Trustee, Publications Fund)



Professional POSTSCRIPTS

This is your department. Your contributions to it are solicited. We want your views on subjects that affect the engineering profession directly or indirectly. Please keep your contributions short, and remember that editing may be necessary to conserve space. Your name may be omitted if you desire.—*The Editor.*

You don't have to be a dentist to know that the general subject of fluoridation of drinking water is, in all respects, a controversial one. In last month's —PP— we printed a letter by Engineer Eugene T. Rogers of Yonkers, N. Y., regarding the treatment of water in La Crosse, Wis. (We even got a letter from a dentist who turned out not to like editors because they printed such stories as the Rogers' piece; further, he claimed all editors were frustrated Fred Allen's who loved such puns as *Yankers*, N. Y. for Yonkers. Our plea: Not Guilty.) In any case, here is an answer to Engineer Rogers by Arthur M. G. Moody, P.E., of La Crosse. Engineer Moody:

—PP—

In Professional Postscripts in the August issue, Engineer Eugene T. Rogers of Yonkers, N. Y., has criticized the Western Chapter of the Wisconsin SPE for its action in endorsing fluoridation of the municipal water supply of La Crosse. Engineer Rogers has made several misstatements of fact, which I shall deal with in a moment, but the greatest objection to his criticism is the unprofessional attitude he displays.

It seems fairly clear that a professional man in one field should respect the judgment of professional men in other fields. Certainly in a question involving strictly engineering matters, I know that I, as a Professional Engineer, would have the most violent objection to any non-engineer who took exception to a technical opinion endorsed by qualified engineering bodies.

The major questions involved in the fluoridation of municipal water supplies are medical and dental. Let us take a look at professional opinion regarding them.

Fluoridation has been endorsed by the national societies of both the medical and dental professions. In the case of La Crosse it was also endorsed by the local medical and dental societies. No physician or dentist has publicly or, to the best of my considerable knowledge, privately cast the slightest doubt on it.

The opposition to fluoridation was headed locally by a chiropractor and a real estate agent. At best one would hesitate to credit the opinion of such people on matters in this field. In the face of overwhelming (so far as I can determine, unanimous) support by those professionally qualified, I believe it incumbent on the professional engineer to associate himself with other professional opinion.

It is interesting to note that the opponents of fluoridation made many false statements with regard to engineering and legal aspects of the problem. The associations of both the engineering and legal professions were therefore under some obligation to make authoritative statements, and both did.

It may be mentioned that in one other specialized field closely concerned with the problem, namely, that of public health, all national and local bodies gave unequivocal endorsement to the program.

Let me deal briefly with Engineer Rogers' misstatements.

First, he says that the proponents of fluoridation present only one side of the story. This is totally false. The American Dental Association, to name only one, has issued a bulletin, widely distributed at the expense of the dentists, giving all the objections which were raised by the opposition.

He says that the proponents "attempt to brush aside objections by the use of ridicule." This is not so. They have answered in detail, with thorough documentation, every objection.

"This [ridicule continues] in spite of the fact that many of the objectors are doctors and dentists and that the American Medical Association has given only a qualified endorsement." Neither of these statements is true, though by frequent repetition the opponents are hoping that people will believe them, and apparently Engineer Rogers is uncritical enough to accept them without investigation. The fact is that almost all of the objectors are chiropractors . . . or health and food faddists.

Engineer Rogers says that we must avoid lending our name to "causes" until we have, through our own evaluation of both sides of the question, determined that the endorsement is proper. Here I agree one hundred per cent. This is precisely what the Western Chapter, WSPE, did. I do not believe a body of professional-minded engineers can do otherwise.

—PP—

Next, another young engineer speaks out on some important issues. Here is a piece by Engineer A. R. Jackson, P.E., of Houston, Texas. See also "Letters to the Editor" on the points Engineer Jackson discusses.

—PP—

I have never read an article or letter that summed-up my personal feeling on any subject any better than did Mr. Jarzembski's comments in the August Postscripts. To show that he and I are not alone, there were two letters in the "Letters" section that made excellent points along the same line.

I do not think the average engineer in this country agrees with the Societys' policies on salaries or the recruiting of engineers. There must be a reason for this difference of opinion. First, in trying to find this reason, it might be well to point out the unusual situation we have in the leadership of our Society. Probably the largest number of our National, State, and Chapter officers are successful consultants, who at present are in the position of businessman first, and engineer second. They are selling; selling is competitive. Their product is engineering talent. The greater the supply of engineering talent, the less the cost. The difference between bid price and cost is profit. This is as it should be, and almost all these men have worked very hard to get where they are; but no matter what our ideals are, it is difficult to be the employer and represent the employee. The next largest group among our Professional

Engineering Society leadership is the former engineer who is now an executive or officer of a large company. His job now is to keep costs down and production up, as it well should be. But does he represent the working engineers? No.

I have been a registered engineer for only a short time, but I have been a member of N. S. P. E. since I graduated from college and would like to say that every man I have met in connection with this organization, officer or otherwise, has been of the highest caliber—but, our organization is not on sound footing. How can it be without the full support of the rank and file? I do not wish to detract from the fine work the N. S. P. E. has done on National, State, or local level, but the average engineer wants an organization that is making very definite steps to improve his economic position, which is as important to the engineer and his family as any other factor, as well as gaining recognition for the profession. I have talked to a great number of working engineers of my own level and higher, and not one was in favor of recruiting engineers. Do the trade unions recruit new members to their trade? No. To their unions? Yes. Does the bar association recruit new lawyers? Does the medical association recruit new doctors? What organization does? Only the engineers spread dreams of fabulous salaries and overnight success. This is not healthy for our profession or for the country as a whole.

The A. B. A. and A. M. A. have a different type problem from us, and are not always right in their methods, but we could learn a great deal from them.

I have no cure-all. There isn't any—but we engineers need a strong organization with a near 100 per cent membership and we will never have it until we make some changes.

—PP—

We continue with a guest editorial that recently appeared in Toledo (O.) *Technical Topics*. It was written by Norman J. Kirk, Vice President & General Manager, Toledo Division, E. W. Bliss Co. Here it is and it's entitled "Wanted: Professionals In Management."

—PP—

Professional employees are the fastest growing group in our work population today, and the field of profes-

(*Continued on page* 26)

PROUDLY DISPLAY THIS P.E. EMBLEM ON YOUR AUTO

This distinctive 3¼-inch emblem belongs on your car. It comes complete, ready to attach to your license plate. On heavy metal, it is built to last. Colors are black and gold. *ORDER YOURS NOW!*

MAIL THIS COUPON TODAY!

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
1121 Fifteenth St., N.W., Washington 5, D. C.

Please send me at once the 3¼-inch P.E. Emblem for my car. I enclose.....check.....money order for $2.50 to cover the cost of the emblem, handling and mailing charges. Send to:

(Name) .....

(Address) .....

(City) ..... (State) .....

I am registered in (name of state) .....

I am.....am not.....a member of NSPE.

Postscripts

(*Continued from page* 25)

sional employment has been widening steadily.

It is obviously important to a company that its professional people have some understanding of the business. Integration into the business is equally important to the professional man, as he considers himself—rightly—as belonging to the management group.

It is the essence of "professionality" to apply objective standards of craftsmanship and accomplishment to one's work, rather than business criteria. It is the objectivity, standards, and refusal to accept uncritically the definition of a problem or an idea of what the result should be that constitutes the major contribution of the professional man. It would seem that these dominant characteristics of the engineer as a professional should be highly desirable in the scope of operating management.

Understanding the tools of new technology and applying these tools correctly will increase our capacity to manage successfully. The new technology will make tremendous demands on management, on its competence, its vision, its economic knowledge and skills, its flexibility—in short—its ability to manage. The problems and solutions facing management lie well within the potential of the engineer.

Professional job skill and a sound perspective of its place in executive management; the will to accept any position—regardless of remuneration—to develop practical knowledge and philosophy of leadership, will assure a successful future.

In developing a perspective, there is no place for allegiances that confine the talent of professional people.

Generally, no one is foreordained to be an executive. It seems to me that the professional man with his education and experience in determining what is desirable, then making it a possibility, and finally a reality, is much closer to realizing a position in operating management than most of his fellow men.

—PP—

To finish up September's —PP— we reprint an excellent editorial from the June 28 issue of the New York *Times*. Here is some straight thinking on a subject that has too often been clouded by emotions, politics, and the like. For more on this, see From Washington, pages 21-22.

—PP—

The American Chemical Society's charge that the Selective Service authorities are violating the law and jeopardizing national security by giving inadequate occupational deferments to young scientists and engineers brings up an important problem. Whatever the legal rights or wrongs may be, this nation has a tremendous stake in the proper utilization of its manpower, particularly that minute fraction of our population whose mental abilities and technical training make them the standard bearers of scientific advance.

The birth rates of the depression-ridden Nineteen Thirties having been so low, young men of draft age are relatively scarce today, and it is understandable that the draft authorities are under great pressure to eliminate every possible deferment. Many a father or mother whose son has been drafted looks askance at young men of similar age, seemingly healthy, who are permitted to remain in civilian life. Thus is built up powerful political pressure to put every physically fit young man into uniform.

As a general matter this concept of equality should be the rule. Yet like other rules this rule must have exceptions. The number of young men who are capable of penetrating the outer reaches of scientific or technical knowledge today and who have shown high promise for the future is extremely small. Yet much of this nation's future rests in the hands of these young people, for youth is the age at which most scientists make their most brilliant discoveries, and it is in the early twenties that most scientists and technicians really take root in the main field to which they will make their prime contributions.

The survival of this country depends in great part upon how well we do in the unceasing technological competition with the Soviet Union and its allies. Only a week ago an Assistant Secretary of Defense warned us gravely that our technological edge is being reduced seriously. In this situation can there be a more inexcusable waste of resources than to subject a brilliant young scientist or engineer to military duty unrelated to the technological defense of this country? The concept of equality of sacrifice must yield to the basic security needs of our nation.

—PP—

New York State Society of Professional Engineers — Autumn Meeting. September 10, 11. Fort William Henry Hotel, Lake George Village, New York.

Virginia Society of Professional Engineers — Annual Meeting. October 9. Cavalier Club, Virginia Beach, Virginia.

NSPE Fall Board Meeting—October 15, 16. Fontenelle Hotel, Omaha, Nebraska.

Missouri Society of Professional Engineers—Annual Meeting. October 22, 23. Statler Hotel, St. Louis, Missouri.

Are YOU interested in . . .
? *Business Opportunities*
? *Training Courses*
Are YOU looking for . . .
? *An Available Engineer*
? *A New Position*
Consult CLASSIFIED Advertising
See Page 31

What makes cancer MAN'S CRUELEST ENEMY?

SOME diseases kill us mercifully.

NOT CANCER. Yet, if nothing is done, 23 million living Americans are destined to die of cancer . . . 230,000 of them *this year*.

SOME diseases reveal their beginnings by pain or fever or shock. Not cancer. It starts silently, secretly, and too often spreads rapidly.

AND SOME diseases spare us our young people. Not cancer! It strikes men and women and children, the old and the young. If nothing is done, one American in five will be stricken with cancer.

SOMETHING CAN BE DONE. You can strike back at this cruel killer with a really generous gift to the American Cancer Society. Your money is *urgently* needed—for research, for education, for clinics and facilities. Please make it a really BIG gift!

Cancer
MAN'S CRUELEST ENEMY
Strike back—*Give*
AMERICAN CANCER SOCIETY

N.S.P.E. Believes

ENGINEERS FOR GOVERNMENT

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

FORTUNE magazine a short time ago made an extensive survey of the top three executives of 250 leading industries of the Nation; 25 top public utilities; and 25 principal railroads. Of these 900 individuals, extremely interesting statistics were found, particularly with respect to the engineering profession. It was noted, for example, that nearly one out of every two of these executives had been trained as an engineer. This survey confirmed what many had been noting for some period of time—that more and more industrial management was turning to those with engineering training to direct the vast complexities of modern industry.

Just as industry has become more complex over the past few years, so government has become more complex and the need for the analytical thinking and training of an engineer has become increasingly important in this area. A number of assignments and appointments in the Federal Government over the past several months have, in many cases, indicated an awareness of the desirability of assignment of men with these talents to governmental jobs; but the record can stand improvement. It has been pointed out that many governmental positions require more basically an administrative ability than a technical background. I am sure all in the engineering profession recognize that the mere presence of technical training and experience do not necessarily qualify a man for certain administrative responsibilities. On the other hand, with the increasing responsibilities being placed on men with engineering backgrounds, the position can be soundly taken that it is not impossible to find men with both administrative experience and engineering background for positions where such combined abilities would prove so helpful to government.

On the encouraging side of the ledger can be found such appointments as Donald A. Quarles, a prominent engineer as an Assistant Secretary of Defense, for Research and Development and the recent selection of Brigadier General Herbert D. Vogel, trained as an engineer with extensive experience in engineering work, as Chairman of the TVA. Working in an extremely important yet little publicized position is Brigadier General John S. Bragdon (Retired), charged with coordinating the various activities of the government in the public works and construction fields for the Council of Economic Advisors.

Disturbing, however, are the recent appointments to the St. Lawrence Seaway Development Corporation and its advisory body, in which it appears that only the Deputy Administrator has an engineering background. This extremely important international project is so predominantly engineering in its nature that it would have seemed almost imperative that at least one, if not more, of the advisors should be an engineer. Believing that recommendations for positions of this kind would be a means by which the Professional Society could be of considerable service to governmental administrators, the National Society of Professional Engineers submitted several names to President Eisenhower for consideration in these appointments. Each of the individuals was well qualified in work similar to that which will be encompassed in the St. Lawrence Seaway project.

It is equally disturbing to find that of the seven members recently appointed to the National Science Foundation, only one was an engineer. While it is recognized that the Science Foundation is primarily concerned with stimulating basic research, an engineering appreciation of the fields in which further research should be encouraged and an evaluation of that already done would be considerably facilitated by the presence of those with an engineering background.

Not only is it important that engineers be available for the kinds of service required by the government, but it is equally important that they be recognized when such service is required. A case in point is the recent United States appointments to the St. Lawrence River Joint Board of Engineers. The appointees were the Secretary of the Army and the Chairman of the Federal Power Commission, neither of whom is an engineer and, while it is true that they have designated as their alternates outstanding engineering subordinates, it seems incongruous that non-engineers should be appointed to an engineering board. NSPE and other engineering organizations had urged the President to appoint qualified engineers to positions clearly requiring engineering talent.

The complexities of modern government require a liberal representation of the engineering profession in high echelons of governmental responsibility. NSPE believes that the citizens of the Country deserve the best of administrative decisions, many of which should be evaluated in engineering terms. Toward this end it shall continue to cooperate with our governmental leaders to present to them names of members of the engineering profession who will, first, serve the public interest, and secondly, will thereby reflect credit on our profession.—***End.***

book looks

The Book: **Introduction to Industrial Management**

The Author: **Franklin E. Folts**

The Publisher: **McGraw-Hill Book Company, Inc., 330 W. 42nd Street, New York 36, N. Y.**

Price: **$6.50**

Reviewing the Book: **Wyllys G. Stanton, Sr., P.E., Chairman, National Education Committee, American Institute of Industrial Engineers**

A review of a book which has been in use for twenty years and gone through four editions can only serve to bring it to the attention of those who have heretofore missed it; to give those who have known it earlier an account of its latest development; or to evaluate it with respect to recent changes in its area and other books in the field. This review endeavors to do all of these things.

No book can be considered properly apart from some knowledge of its background, and for those who are not familiar with the Harvard case method of instruction, this one may serve as an interesting introduction. At the same time, a knowledge of the Harvard system explains the book. In his preface Professor Folts quotes from the original edition to the effect that the purpose is to deal with business and economic conditions as they exist in industry rather than to promulgate theories or generalities concerning them. For this reason the text material containing the theories is woven in with the discussion of cases. There are 25 cases and 68 problems, with the difference between them consisting largely of the amount of detail with which they are discussed. In some instances a case includes a statement of a possible solution, in others there is only a statement of facts, but following each there is a list of specific questions which will aid the reader in determining how well he has grasped the essential points, and will provoke him to speculative thinking about the issues raised. The problems are briefer statements of facts concerning a situation faced by a business with one or more questions. A by-product of the case presentation is a smattering of details concerning the processes and conditions in many different kinds of businesses.

The utility of the case method of instruction in law and in those business schools wherein it has a record of successful accomplishment has been amply demonstrated. It is not so clear whether the method is so useful for younger students, or for readers who are self teaching. As Professor McKenna of Penn State pointed out recently, assignment of a case problem implies the ability of the students to solve it. To this we may add that psychology reveals that learning is most complete when success is achieved, therefore learning situations of indeterminate results are at least questionable. It is true that experiments show that subjects are bothered by and continue to think about problems wherein they have not attained a successful conclusion, and here there may be a credit value.

Within the limitations of a book that presents many cases chosen from actual business operations, to illustrate particular points of theory, an experienced reader cannot help feeling that he is at a disadvantage in comparison with the actual principals, in that they would have available to them additional details of the situations and personalities which cannot be reduced to paper. Moreover there is a realization that decisions, which are the principal stock in trade of the business executive, are necessarily made in the light of the best information currently available, and are often subject to revision when reviewed in retrospect. On balance, perhaps all is well, the experienced engineer reading at home has his experience to supply desirable qualifications, while the immature student reading for class preparation has the opportunity to review the material when he meets an experienced instructor.

The book is of value to both Industrial Engineers and other Engineers in Industry, the former will find topics which they have studied in detail in courses in Production Planning, Engineering Economy, Plant Location and Layout, Personnel Administration, etc., discussed in a way that may put them in perspective with all of the other topics that must be considered by business executives and thereby give them better appreciation of their branch of the engineering profession. Non-industrial Engineers employed in industry should gain even more understanding of the relations of business and technical decisions. They should after a study of this book, be better able to see why the president or general manager of their company sometimes makes decisions exactly contrary to the courses of action which they have suggested as a result of their experiments and technical investigations.

There are too many interesting facets to the book which are apparent at once to a person who has taught the particular type of course which it is intended for, to cover them adequately in a review. There is the feeling that here is a somewhat more advanced text, which has been made thoroughly up-to-date by careful revisions. For example it includes a discussion of the conversion of "war baby companies" after the end of World War II and the impact on management of the Korean War. The classifications employed by Professor Folts are very interesting in comparison with those in more familiar texts; sample, industrial processes characterized as extractive, conditioning, analytical or synthetic, vs., continuous or interruptable, capital goods or consumer goods, etc.

Meet the Reviewer . . .

Professor Wyllys G. Stanton, Sr., fellow and founder of the American Institute of Industrial Engineers, and former Treasurer of the Ohio SPE, was born in Saint Louis in 1904. He held the Saint Louis Yale Club Scholarship for four years and was graduated in 1926 in Industrial Engineering. In 1936 he received a master's degree in Business Administration, and he has also completed two years of advanced graduate work in Industrial Psychology at Ohio State University.

Stanton

His early experience included plant engineering, public accounting and sales work. For seven years he was the industrial engineer in charge of the Planning Division, Saint Louis Farm Credit Administration, and five years were spent on active duty before and during World War II in the Army Ordnance Corps.

In 1945 Mr. Stanton was appointed a professor of Industrial Engineering at Ohio State University, where he also served as a member of the Executive Committee of the Ohio State Personnel Research Board. After five years at Ohio State he spent two years as a manufacturing executive and then returned to teaching as professor of Industrial Engineering in the University of Alabama.

An *American Engineer* SPECIAL REPORT

Re: Strategic and Critical Materials

● "Our jet engines come from Nigeria (where we get our columbium), and not from Hartford; our atom bombs come from the Belgian Congo (where we get our uranium), and not from Oak Ridge; our steel comes from India (where we get our manganese), and not Pittsburgh; our bearings for our wheels and motors from Malaya (where we get our tin for babbitt), and not from Detroit."—This dramatic and alarming statement was made by one of NSPE's most prominent members, Major Alexander P. de Seversky, during the course of the hearings on accessibility of strategic and critical materials to the United States recently concluded by the Minerals, Materials, and Fuels Economic Subcommittee of the Senate's Committee on Interior and Insular Affairs.

The 380-page report of the subcommittee, which was under the chairmanship of another well-known engineer, Senator George W. Malone of Nevada, is indeed a document of great importance and considerable interest not only to the American public in general, but also to the engineer and the industrialist in particular. The report, which incidentally is backed by ten volumes of printed testimony and information, sounds and sounds again the note of alarm so evident in the above statement of Major de Seversky. The burden of this alarm is that the United States has permitted itself to become too dependent on sources of strategic and critical materials that can be cut off in a flash in the event of a war with Soviet Russia, either by direct military destruction, loss of control of the sea and air lines of supply, or "neutralization" by the countries in which the materials are located whereby they seek to avoid involvement in the conflict.

"Testimony is abundant," the report points out, "that our domestic and foreign policies have been based on the false assumption that the United States is a have-not nation insofar as the supply of critical raw materials necessary to this Nation in wartime is concerned. . . . This misconception that we are a have-not nation has found wide acceptance by the public through confusion between the statistical and engineering terms, 'proved commercial reserves' and 'potential and latent resources,' which include developed ore, probable ore, possible or inferred ore to designate supplies of ore in various states of development."

Manganese for our steel comes from India.

What is actually true is quite to the contrary, the Malone committee has concluded, terming the theory that the United States is necessarily a have-not nation in respect to a very considerable number of strategic materials, and that we have, for example, exhausted our minerals and ores, "one of the greatest frauds and hoaxes ever perpetrated on the American people."

The important thing to keep in mind, in the eyes of the subcommittee, is that the United States is a part of the Western Hemisphere and that the Western Hemisphere most definitely can become completely self-sufficient in the production of critical materials. The significance of this conclusion is further emphasized by the testimony of military experts during the hearing that the two steps necessary to our survival are: (1) the creation of the most powerful air force in the world; and (2) making the Western Hemisphere self-sufficient in strategic materials. Moreover, the report states that "This Nation can materially increase its own economic production of strategic and critical materials by strengthening its laws regulating foreign trade."

The subcommittee puts much emphasis on the fact that "the absolute necessity for going-concern industries cannot be overemphasized," particularly in cases where materials, such as coal and petroleum, cannot actually be stockpiled. It notes with some concern the fact that "the coal industry is in a state of decline" and recommends that appropriate steps be taken to correct this condition.

Another subject for concern, according to the subcommittee, is the confusion of responsibility in the stockpiling program. "Numerous administrative agencies and departments of the Government are involved in the stockpile program, or in efforts to increase the production of critical materials," the report points out. "They act independently of each other and none are charged with the complete operation. Many are not cognizant of the end objectives of the program. Their activities are marked by confusion and delay, frequently defeating the intent of Congress."

Still another situation that was gravely looked upon by the Senators was the fact that efforts have

(Please turn the page)

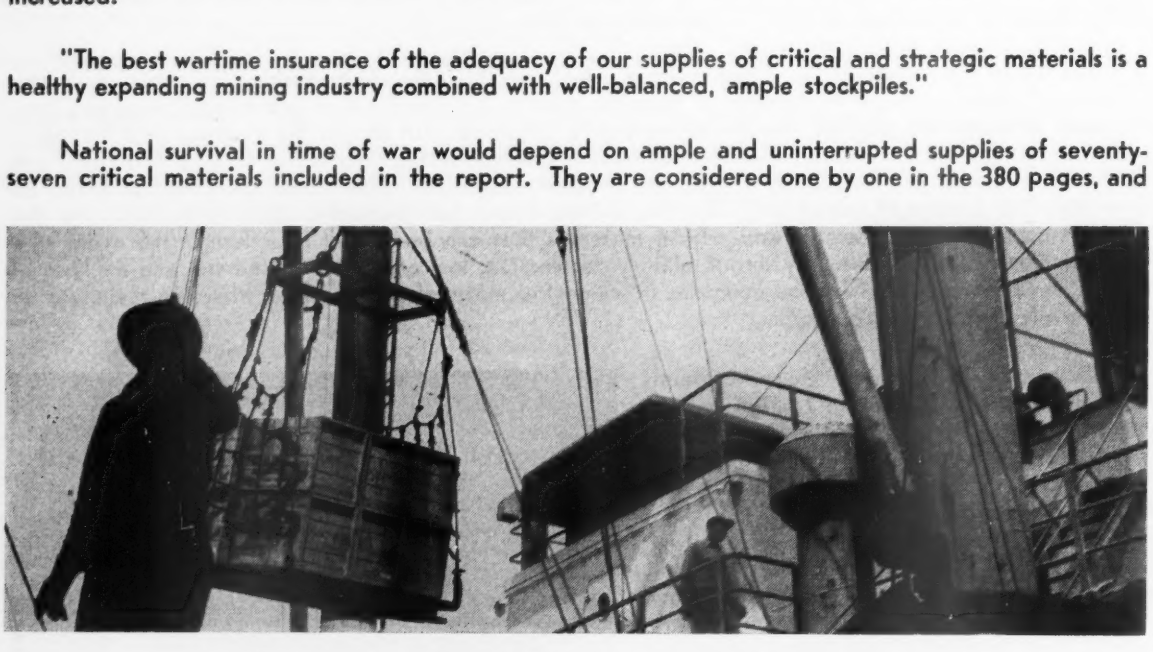
(Continued from previous page)

recently been made to dismantle the only tin smelter currently in operation in the Western Hemisphere —a U.S. Government-operated facility in Texas City, Texas. Far eastern sources of tin may well prove unavailable in any future war. Bolivian tin resources in the Western Hemisphere are more than adequate, however, the subcommittee finds, but the Senator also emphasized the absolute necessity of retaining the tin smelter in the United States as a going concern to insure our adequate supply.

"Going-concern production," as a matter of fact, might well be considered the key phrase of the subcommittee study. "A stockpile of each critical material must be maintained which, coupled with going-concern production within the Western Hemisphere, will be ample to meet the military and civilian needs," the report states. "Such a stockpile can be decreased as the going-concern production is increased.

"The best wartime insurance of the adequacy of our supplies of critical and strategic materials is a healthy expanding mining industry combined with well-balanced, ample stockpiles."

National survival in time of war would depend on ample and uninterrupted supplies of seventy-seven critical materials included in the report. They are considered one by one in the 380 pages, and



Past experience shows that when war comes, shipping stops.

twelve major recommendations have been made by the Senatorial group as a result of its findings.

Foremost is the recommendation that there be the "closest cooperation" among the countries of the Western Hemisphere, where will be found the only dependable source of the necessary strategic materials in wartime. Appropriate Congressional control of foreign trade, elimination of the United States' dependency on remote foreign sources of strategic materials, increased depletion allowances to producers of critical minerals and materials as a production incentive, and stepping up the Federal stockpiling program and coordinating this program with "going-concern" production industries of this hemisphere are among the other measures strongly advocated in the Malone subcommittee report.

Also recommended are studies to improve and more fully develop petroleum, gas, and coal resources. Increasing the production goal of the new wonder metal, titanium, to a minimum of 150,000 tons annually is regarded as a "military must," and it is suggested that the goal for production of uranium for fuel be made adequate to meet both military and civilian requirements. "A hemisphere self-sufficiency in uranium for fuels can be attained," states the report.

A review of the work of the Securities and Exchange Commission by appropriate Congressional committees is recommended to clarify its duties and responsibilities. This recommendation resulted from complaints made before the subcommittee that some of the Commission's actions in "improperly" attempting to determine the feasibility of an enterprise, or making public announcements of investigations of securities sales prior to confidential inquiries justifying such announcements, had retarded the discovery and development of new minerals.

Furthermore, the subcommittee recommended precise determination by Congress of the duties and relationships of the agencies engaged in the stockpiling program to clear up existing confusions. It also suggested annual $50-million appropriations "to establish and operate a comprehensive 5-year program of laboratory, pilot-plant, and exploratory research into improved methods of beneficiation of critical materials and the study of substitutes, including synthetics and replacements." And finally, it urged rejection of international controls of production, prices, and supplies of critical and strategic materials "unless by legislative action by the Congress of the United States."

Letters

(*Continued from page 5*)

of the University of Massachusetts, with respect to the drafted civil engineer who was assigned to a radio field repair school. I, too, read General Sturgis' article in the AMERICAN ENGINEER and feel that either General Sturgis has been misinformed as to the requirements of the Corps of Engineers, which seems highly unlikely, or else the adjutant general's office is not well coordinated with the office of the chief of engineers, which is the more likely situation.

It seems inconceivable to me that, with all the talk of the utilization of engineering personnel and the critical nature of the engineering profession in general, the talents of a young engineer should be so wasted by the military service. I think this is a case in which the NSPE should take a most active part in either seeing to it that this young man is assigned engineering duties commensurate with his abilities or that he is released from military service to serve in an engineering capacity in one of our industries, which are now desperately in need of engineering graduates. . . .

A. GEORGE MALLIS, P.E.,
Springfield, Mass.

Leaders Wanted . . .

Dear Editor:

In reply to two letters in the June issue, let these young men take heart from an older man holding office in N.S.P.E. at the State level. I and many engineers to my personal knowledge agree with them wholeheartedly.

I, for one, have long argued against the claptrap of those who speak of the dire shortage of engineers. Personally, being more concerned with management and business costs, I can agree that these young engineers are correct in finding fault with the complacency of the N.S.P.E. This censure should not only be confined to the leadership, but should also include the majority of the N.S.P.E. membership.

The continuing economic leveling resulting from our galloping national socialism, which affects salaries of engineers, cannot be blamed on N.S.P.E. leadership or on engineering management, who have only been caught in the current created by vote-seeking politicians and starry-eyed crackpot economists.

That fact, however, does not excuse engineering leadership from not fighting back more vigorously to retain the proper balance between our professionalism and labor and tradesmen, down to whose level the politicians and socialistic manipulators are pulling us—along with other professions.

While big business could improve its consideration of the engineer, the bitter fact remains that the "offices of the people," the engineering offices of the Federal, State, County and municipal level are the most guilty in keeping the engineer an anonymous drone and slavey at the lowest possible salary level.

Smart big business will pay for engineering services when the need is there and it means dollars. The same needs are present from coast to coast, more so today than ever before insofar as the people's various government interests are concerned.

That which is called a shortage of engineers is really an insult to a potential engineer's intelligence. The antidote is obvious and the N.S.P.E. could well be more the corrective force than it is today.

FRANK L. MARTIN, P.E.,
Alexandria, Virginia.

CLASSIFIED ADVERTISING

Minimum 3 lines.
Undisplayed: $1.50 per line.
Displayed: Same rate as General Advertising.

Positions Wanted: Undisplayed, 75c per line. Displayed, 50% off General Advertising Rates.
Box Number chargeable as one line.

Mail Box Number replies to:
AMERICAN ENGINEER
1121 15th St., N.W., Washington 5, D. C.

Business Opportunities

Opportunity in Colorado for capable engineer to secure interest paying $15,000 and over in Mechanical Electrical Civil Consulting firm. Ability and reputation more important than financing. Owner's heart and health bad. Box 902-B, AMERICAN ENGINEER.

Courses, Training

ENGINEERS
Learn Construction Management

Complete course in the practical "know-how" of organizing and directing large projects on construction. For sample lessons and full particulars—write:

GEO. E. DEATHERAGE & SON
Construction Consultants
411—5th Ave. So. Lake Worth, Fla.

Positions Available

FOR PERMANENT POSITION IN ROCKY MOUNTAIN AREA — Bridge Designer with minimum five years experience designing highway bridges. Send detailed summary of experience and training together with minimum salary acceptable. Reply to Box 901-A, AMERICAN ENGINEER.

WANTED

ENGINEER for estimating electrical construction jobs and for engineering sales. Must be aggressive and have selling personality. Top salary for right man. Excellent opportunity for recent college graduate. Located in ideal Southern Wisconsin city for raising a family. Write Box No. 903A, AMERICAN ENGINEER.

Positions Wanted

LICENSED ENGINEER, N. Y., BME, BSEE, 7 yrs Industrial exp., 2 yrs Navy Electronics. Seek position of responsibility, challenge, with Ind. or Eng. concern. Age 29; family. Will relocate. Box 905-W, AMERICAN ENGINEER.

ENGINEER — Registered both M.E. and E.E. 33 years experience in design, construction, management, sales and consulting practice specializing in materials handling, ore, rock and coal processing plants and industrial power plants and electrical distribution. Open to offers from industry, engineering firms or equipment sales organizations. Retirement and fringe benefits of no interest. Box 906-W, AMERICAN ENGINEER.

No System? . . .

Dear Editor:

I think the article by Major General Samuel D. Sturgis, Jr. and the additional comment by Prof. Marston of the University of Massachusetts were fine. . . . Who's kidding whom? I think it's General Sturgis! He ought to know by now that the Army Engineers have no way of attracting young engineers, in spite of the fact that one may get a vast amount of diversified experience if he joins them. The pay is too low. (Too,) he says he deplores the fact that more young engineers are not attracted to the Army Engineers. Has he or anyone else in his outfit ever worked out a system for getting them or keeping them? . . .

(Name withheld by request.)

Placement Service

The following positions are listed with The Ohio Engineers' Placement Service, Inc., address below:

Positions Available

STRUCTURAL Engrs. exp. in structural steel erection and detailing. Age over 30 for top position (small amount of detailing work) $7,000 to $8,000. Also, position for young structural engr. with some experience. (90-S-1)

INDUSTRIAL Engr. with min. 5 to 10 yrs.' intensive exp. in material handling. Exp. in time study and incentive programs. $8,000 to $10,000. (109-S-5)

SAFETY ENGINEER—Min. 4 years' exp. as safety engr. in heavy industry. Any engineering degree acceptable. Approximate salary range $508 to $600. (174-S-5)

Positions Wanted

GRAD. REG. CIVIL ENGR. 10 yrs.' diversified exp. in research, industrial buildings, petroleum processing and chemical industry. 5 yrs. responsible charge of projects, 3 yrs. as chief structural engr. Author of technical papers, good speaker. Desires Engr. Manager Position. $12,000. (A-430)

REG. ENGR. INDUSTRIAL — Graduate Mechanical. Age 41. Courses after graduation in industrial management and engineering. Over 8 yrs.' exp. at staff level in industrial and manufacturing engr. Wants position commensurate with ability and tr. with reputable company. Free to travel. Approx. $850. (A-27)

REG. MECHANICAL ENGR. Graduate Civil. Age 47. Ext. exp. as design engr. for heavy equip. and as private consulting engr. specializing in design of heavy machinery, excavating, material handling, special plant equipment. Wants position in charge of development. $1,000. (A-208)

GRAD. REG. MECHANICAL ENGR. Age 44. Exp. as works mgr. in charge of sheet metal fab. shop; plant supt. in charge production; plant layout, devel., methods, etc.; chief designer and equip. engr. Wants position as plant mgr. or supt. requiring tech. & adm. duties; chief engr. Cincinnati area only. $8,000. (A-284)

(Small service charge)

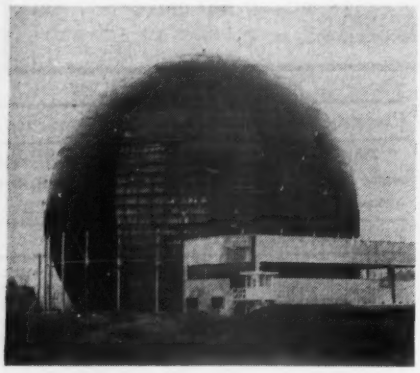
THE OHIO ENGINEERS' PLACEMENT SERVICE, INC.
5 East Long St., Columbus 15, Ohio
Affiliated with OSPE

Pakistan Seeks Training Opportunity for Engineer

The Pakistan Government has solicited the assistance of NSPE members operating civil engineering firms to help in the training of one of their engineers. It is desired to place a civil engineering graduate in a civil engineering office as a trainee (without compensation) for a period of approximately one year.

Members interested in securing details should communicate directly with: *S. G. Khaliq, Cultural and Educational Attache, Embassy of Pakistan, Washington, D. C.*

---NEW PROCESSES---



The largest Hortonsphere in the world, 225 feet in diameter, nears completion.

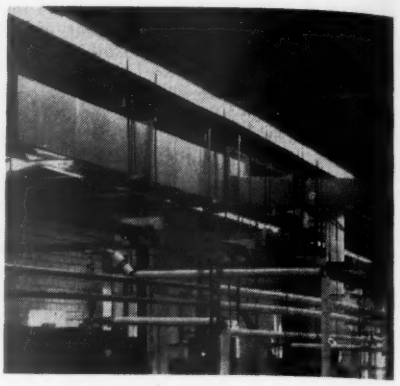
Weatherproof Coating For G. E. Sphere

Insul-Mastic No. 4010, a reinforced asphaltic coating, was chosen as the outer skin of the Hortonsphere near Schenectady, N. Y., in which the Knolls Atomic Power Laboratory, operated by the General Electric Company for the United States Atomic Energy Commission, will test a prototype atomic powered submarine. The largest structure of its kind in the world—225 feet in diameter—has a coating of Insul-Mastic over its steel surface. Cellular glass insulation was placed over this, and the final covering was a vapor and weather barrier of Insul-Mastic membraned with glass cloth.

Hole Digger Like "Sword Of Damocles"

Power company crews operating hole digging equipment along highways and rural roads have always felt they had the "sword of Damocles" above their heads. In a manner of

speaking, they did. The tall metal drive-bar of the power digger came dangerously close to and sometimes touched the energized primary wires overhead. The California Oregon Power Company solved the problem by insulating the upper drive bar with a piece of Westinghouse Micarta plastic tubing.



Plastic Ventilating Ducts

Ventilating ducts made of Seiberling Rubber Company's new plastic material, Seilon, are used to carry away deadly acid fumes from plating tanks at Cleveland Graphite Bronze Company, Cleveland, O. Metal ductwork would not last long, according to Seiberling, because the acid fumes would eat it away. But Seilon, a rigid polyvinyl chloride, can be used for this and other jobs calling for a corrosion resisting material. Strong and chemically inert, Seilon will be produced starting this summer at a new plant now being built at Newcomerstown, O. Production at present is on a "pilot plant" basis in Barberton, O.

The Professional Directory lists an *Engineering Specialist* who can help you with your specific problem.

Advertisers' Index

Acme Fire Alarm Co., Inc. 5
Adache & Case, Engineers 38
Aerofin Corporation 40
Albright & Friel, Inc. 38
B. H. Backlund & Associates, Inc. ... 37
Elmer S. Barrett Associates 38
Bettenburg, Townsend & Stolte 36
Black & Veatch 36
George W. Brandt, Engineer 38
Roger Barrett Bross 36
Brown & Blauvelt 37
Builders Estimating Service 39
Capitol Engineering Corporation 38
Commonwealth Associates, Inc. 36
Consoer, Townsend and Associates ... 36
Cormit Engineering Company 38
Crescent Engineering Company, Inc. 36
Geo. E. Deatherage & Son 31
DeLeuw, Cather & Company 36
Thomas E. Duce Associates 39
Eastern Heat Treating & Brazing Corp. 39
Ehrco Die Casting Service 39
Electro-Search 38
Engineers Testing Laboratory, Inc. .. 39
Eustis Engineering Company 36
Fay, Spofford & Thorndike 36
Orrin E. Fenn 36
Forrest and Cotton 39
Frazier-Simplex, Inc. 38
Freese & Nichols 39
Gannett, Fleming, Corddry & Carpenter, Inc. 38
General Electric Company 7
Gustave M. Goldsmith 38
Greer & McClelland 37
Frank E. Harley & Associates 37
C. M. Hathaway 36
The Hinchman Corporation 36
Howard, Needles, Tammen & Bergendoff 37
Kaiser Engineers 36
Kennedy-Riegger Drilling Co., Inc. .. 40
Knappen-Tippetts-Abbett-McCarthy .. 37
Law-Barrow-Agee-Laboratories, Inc. .. 36
Lawrie & Green & Associates 38
Madigan-Hyland 37
Emmet J. McDonald 38
Metcalf & Eddy 36
Mercury Engineering Co. 39
Merritt & Welker 36
Maurice P. Milliken 38
Modjeski and Masters 38
Niagara Blower Company 8
H. C. Nutting Co. 38
James P. O'Donnell 37
Oklahoma Testing Laboratories 38
Palmer & Baker, Inc. 36
Parsons, Brinckerhoff, Hall & Macdonald 38
Potteiger Company, Inc. 39
Radio Corporation of America 3
Revolvator Company 3
Cyrus Wm. Rice & Co., Inc. 38
Robert and Company Associates 36
Lloyd N. Robinson 39
F. A. Sando 36
Seelye, Stevenson, Value & Knecht ... 38
Singstad & Baillie 38
W. W. Slocum & Co. 37
South Florida Test Service 36
D. B. Steinman 38
Max Stern, P.E. 38
Syska & Hennessey, Inc. 38
Toledo Testing Laboratory 38
Emerson Venable 38
Warren-Knight Co. 6
H. P. White Lab. 36
Whitman, Requardt and Associates .. 36
A. W. Williams Inspection Co. 36
Wilson & Company 36

N.S.P.E. PUBLICATIONS NOW AVAILABLE

The NSPE publications, as listed, are available upon order. Please use the form below, circling the numbers which correspond to the particular publications. Information on bulk orders of these items may be secured by writing to the Society. Remittance must accompany order.

AVAILABLE AT COST

1. Canons of Ethics
   Suitable for Framing ..... $ .50 ea.

*2. How to Attract and Hold Engineering Talent
   Executive Research Survey No. 3, 60 p. ..... $2.00 ea.

*3. How to Improve Engineering-Management Communications
   Executive Research Survey No. 1, 46 p. ..... $2.00 ea.

*4. How to Improve the Utilization of Engineering Manpower
   Executive Research Survey No. 2, 55 p. ..... $2.00 ea.

5. Income & Salary Survey
   1952 statistics covering NSPE members ..... $ .50 ea.
   Non-Members $1.00 ea.

*Published by the Professional Engineers Conference Board for Industry in cooperation with the National Society of Professional Engineers. Use coupon below but make checks payable to the Board.

FREE PUBLICATIONS

6. AMERICAN ENGINEER Articles (reprints)
   a. There's Nothing Wrong With Engineers—
      Dr. Jose B. Calva, P.E.
   b. Professional Organization of Engineers—
      William F. Ryan, P.E.
   c. Needed: A Sure Sense of Values—
      Bernard Baruch
   d. An Engineer's Report on the Future—
      Charles F. Kettering, P.E.
   e. Ethics and the Professional—
      Dean N. W. Dougherty, P.E.
   f. Professionalism or Unionism: Facing the Issue—
      T. Carr Forrest, Jr., P.E.
   g. Should Corporations Practice Engineering?—
      Yes! says Ronald B. Smith, P.E.;
      No! says V. George Terenzio, P.E.
7. Canons of Ethics
8. Collective Bargaining by Professional Employees
   Statement of policy by NSPE
9. Competitive Bidding for Professional Services
   Statement of policy by NSPE
10. Development of Natural Resources
    Policy statement by NSPE
11. Engineering—A Career of Opportunity
    Vocational Guidance Pamphlet, 8 p.
12. Engineering Profession in National Security, The
    Statement of policy by NSPE
13. Every Man A Debtor
    Informational pamphlet on NSPE policies and programs suitable for membership promotion, 16 p.
14. Legislative Bulletin
    Published monthly; available to members upon request.
15. List of Accredited Engineering Schools
    Reprint from ECPD Annual Report
16. NSPE Believes:
    a. Why a Professional Society?
    b. Unity for Professional Action
    c. Is our Registration Requirement Limiting Membership?
    d. Our Public Relations Responsibilities
    e. Our Function in Governmental Liaison
    f. The Professional Engineer in Industry
17. NSPE Constitution and Bylaws
18. Next Step—Registration
    Informative pamphlet for engineering students and others on values and procedure for engineering registration, 8 p.
19. Programs for Professional Development
    Four separate pamphlets based on remarks to the 19th Annual Meeting
    a. The Need for More Effective Professional Action—
       Alex Van Praag, Jr., P.E.
    b. The Professional Development of Engineers and Scientists in Industry
       Clark Ransom, P.E.
    c. The Place of Registration in Professional Development—
       Karl B. McEachron, P.E.
    d. NSPE's Development of Professional Objectives—
       Perry Ford, P.E.
20. Recommended Procedure for Negotiating Engineering Contracts
    Policy statement by NSPE
21. Standard Form of Agreement Between Owner and Engineer for Professional Services

KNOW YOUR SOCIETY— READ ITS PUBLICATIONS

PLEASE PRINT ALL INFORMATION

USE THIS ORDER FORM TO SECURE PUBLICATIONS 9

TO: NSPE
1121 15th St., N.W.
Washington 5, D. C.

Send me the publications in accordance with the numbers circled below:

1 2 3 4 5 6 (a. b. c. d. e. f. g.) 7 8 9 10 11 12
13 14 15 16 (a. b. c. d. e. f.) 17 18 19 (a. b. c. d.) 20 21

I enclose (check), (money order), (cash) in the amount of $..... to cover cost of publications for which a charge is made.

Ship to:

NAME .....

STREET .....

CITY .....**STATE** .....

Omaha Prepares For NSPE Fall Meeting; Professional Discussions Slated

NSPE's Fall Meeting has been scheduled for October 15-16 at the Fontenelle Hotel in Omaha, Nebraska, and arrangements are going forward under the direction of Nebraska Society members who will act as hosts for the occasion. L. E. Miller has been appointed chairman of the Steering Committee for the conference, and he is being assisted by C. W. Durham, Nebraska SPE president, B. H. Backlund, S. A. Michael, and J. D. Griffiths.

A number of subcommittees have also been set up to handle various meeting details. Their chairmen are as follows: S. A. Michael, Publicity Committee; Richard Furguson, Program Committee; John Detweiler, Registration Committee; John Griffiths, Hospitality Committee; and George Beard, Finance Committee. A Ladies' Committee is also working out a special program for the engineers' wives who will be in attendance.

The two-day conference will be devoted to the discussion of various problems and developments affecting professional engineers. Various Society officials will be present to report on the progress of NSPE's national programs. The name of the main banquet speaker will be announced later; the Steering Committee reports that he will be a nationally prominent engineer who will be able to offer important professional advice to the board members and other engineers taking part in the meeting.

NSPE Selects Theme For Engineers' Week

"Engineering—Builder of a Brighter Future" has been selected as the theme for National Engineers' Week, February 20 to 26, 1955, it has been announced by Anatole Gruehr, chairman of NSPE's National Engineers' Week Committee.

This month NSPE state and chapter affiliates will begin receiving the first in a series of National Engineers' Week Action Letters containing suggestions for local Engineers' Week projects.

The first "Letter" outlines the organization of a speakers bureau at the chapter level and calls on chapter officials to begin setting up a bureau of speaking talent, recruited from the membership, as soon as possible so that speaking dates can be arranged for February.

The "Letters" will continue on a monthly basis right up to February, and will supplement the promotional aids offered in the National Engineers' Week kit, Mr. Gruehr said. This kit, now in preparation at NSPE headquarters in Washington, will be mailed in October. Mr. Gruehr pointed out that the kit will contain "model" publicity, radio, and TV programs, and exhibits that can serve as the basis for local projects in the chapters.

Featured in the kit this year will be a complete script and a set of visual aids for a 15 minute TV program as a sample of what can be done with local chapter talent.

Registration

(*Continued from page* 19)

differences and petty quibblings between engineers were forgotten.

The twelve leading engineering organizations in the United States, with no exceptions, combined on preparing and approving a new Model Law. This law adopted in 1946 was the basis for a new law enacted by the Illinois State Legislature, which to date has not been challenged. Thus in 1946, under a threat against the very future existence of engineering registration, for the historic first time, every major engineering organization in the United States approved a single Model Law.

Is it going to take some similar drastic threat to bring all engineers together into a Unity Organization?

The most progressive and the most appreciated improvement to the Model Law was the 1937 adoption of an "eminence" clause. This clause permitted boards to grant registration without written examination to engineers over 35 years of age, having twelve years of satisfactory experience.

THE Engineer-in-Training provision was added in 1943 to protect and sustain young engineers. EIT established engineering graduates or others, with equivalent study in the School of Hard Knocks, as professionals in training. In many instances under the old Wagner Labor Act, the EIT certificate gave them professional status and permitted them to avoid being forced into a labor union against their will.

EIT permits the young engineering graduate to take a written examination on theory while it is still fresh in his mind. Even if a refresher course at this early state is necessary, it is usually of little hardship.

EIT is a stimulant to keep the young engineer professional-minded until he acquires the four years of necessary experience—he remains conscious of his attachment to his profession.

Registration is a mark of competence and should be the goal of every young engineer with EIT his first step.

Even though young engineering students expect to enter a field other than the practice of engineering, they seldom really know what awaits them. Taking and passing the EIT examination would seem good advice for anyone who has invested four years in an engineering education.

EIT was instigated in 1943 and more than half the states now give EIT examinations. These states represent 85 per cent of the engineering population. The remaining states will surely follow. Not all states recognize EIT examinations given in other states. The effort now under way to obtain complete interstate recognition of EIT examinations will not cease until it becomes unanimous.

While the door is still left open for prospective young engineers to take the EIT examination with four years of experience and home study, instead of four years in an engineering college, the door is slowly closing. The gap between these two methods of becoming a registered engineer widens every year.

In October, 1953, at the annual meeting of the National Council of State Boards of Engineering Examiners, the president openly advocated the following action: "I believe that we have obtained sufficient age now to require that no person can qualify for registration as a Professional Engineer unless that person has graduated from an accredited engineering curriculum."

Of course, no act of the National Council can bind any state and it will take many, many years before all forty-eight states will pass such a restrictive law, but—the die is cast and eventually all or most states will have such a law.

Before engineering registration every plumber was a "sanitary" engineer, every contractor was a "structural" engineer and every real estate man was an "appraisal" engineer.

It took forty years from the 1907 Wyoming law until the adjoining State of Montana made it unanimous in 1947. Up until 1935, these were difficult and tortuous

(*Continued on page* 40)

With Our Members . . .

Installation News

New Officers Assume Leadership In Many Chapters Throughout the U.S.

As the new administrative term begins on the national level, many chapters also throughout the country have transferred the chapter leadership from one group of officers to another.

At a recent meeting of the Salina Chapter of the Kansas Society of Professional Engineers, LeRoy F. Sanderson, an engineer with Wilson and Company, was elected to the presidency for the 1954-55 year, succeeding Alex Barneck. Other new officers in Salina are: R. Ballou, vice president; F. T. Bonebrake, secretary-treasurer; and William R. Davis, director.

Monroe County P.E.'s, affiliated with the New York State SPE, have also elected new officers at a recent business meeting. They are: Ernest E. Elder, president; Phillip M. Kimmell, first vice president; Lloyd B. Welch, second vice president; Kenneth B. Lacey, secretary; Robert M. Decker, treasurer; Lawton C. Englehart, assistant treasurer; and Lewis D. Conta, Arthur A. Reeves, and Donald S. McPherson, directors.

The Lorain County Chapter of the Ohio Society has likewise elected new officers lately. They include: Don E. Kropp, president; Ray E. Hollis, vice president; D. A. Augustin, secretary; S. H. Young, treasurer; J. Fred Krueck, director (three-year term); and D. E. Starkey, OSPE trustee.

New officials of the Northwest Chapter of the Georgia SPE are: Francis L. Dale, president; John B. Lovell, vice president; Frank W. Aldridge, secretary; Oscar R. Lurwig, treasurer; J. Ridley Reynolds, Jr., state director; and J. C. Lifsey and Paul C. Williams, chapter directors. The term of the latter two runs 1954-56. Directors still serving for the 1953-55 term are John H. Lopez and Harry M. Oldham.

Another Georgia group—the Macon Chapter—has installed a new slate of administrative leaders. They are: A. L. Mullins, president; Thomas Cater, vice president; R. Berl Elder, secretary-treasurer; T. A. Jones and Michael Guritz, directors; and Joseph Witherington, state representative.

Finally, the news from the Southwest Chapter of the Georgia Society spells the election of the following: C. T. Oxford, president; H. H. Schomburg, vice president; J. H. Rigsby, secretary-treasurer; R. O. Bradley, state representatives; and E. J. Ford and J. N. Hudgens, chapter directors.

Pennsylvania Outing

The Northeast Chapter of the Pennsylvania Society of Professional Engineers held its annual outing at the Star Light Inn, near Falls, Pa., on August 14. Both lunch and dinner were served to the engineers and their guests who took part in the day-long social event.

The outing was organized by a committee composed of Donald N. Smith, chairman, Jack Griffiths, and Earl Burrier. J. C. Earl is president of the chapter.

Dr. Gilbreth Receives New York Award

The New York Chapter, NYSSPE, presented a Distinguished Service Award to Dr. Lillian M. Gilbreth, world-famed engineer, during its recent annual banquet. L. to r. above at the main table are: Elies Elvove, first vice president of the chapter; H. F. Roemmele, first vice president, NYSSPE; Harold Torgerson, asst. dean of engineering, New York University; H. H. Funk, newly-installed chapter president; Dr. Gilbreth; A. R. Gruehr, toastmaster; P. J. Kranenburg, outgoing chapter president; T. M. Linville, president, NYSSPE; T. J. Kauffeld, second vice president of the chapter; and H. I. Podell, chairman, Chapter Activities Committee.

At the table in front, l. to r., are: Raymond Reddy, president of the Richmond Chapter, NYSSPE; Ernest F. Fox, financial secretary emeritus, NYSSPE; and Mrs. Fox. The other gentleman is unidentified.

Joliet Engineers Take Part In Civic Celebration

Officers of the Joliet Chapter of the Illinois SPE rode in the parade marking the inauguration of the city's million dollar Pageant of Progress in a car bearing the chapter banner. Those taking part were: W. K. Waltz, chapter president whose auto was used by the chapter representatives; Leslie W. Keeler, vice president; Donald M. Parkis, secretary; Lloyd C. Gilbert, treasurer; and Fred H. Tittsworth, past president.

Other members of the chapter were guests of the Pageant of Progress, which was held from July 29 through August 1 at the Joliet Memorial Stadium. Plans are now under way to make the successful civic celebration an annual event.

Harold Funk Becomes NYSSPE Executive Sec'y

Thomas M. Linville, president of the New York State Society of Professional Engineers, has announced the appointment of Harold H. Funk as executive secretary of the State Society. The appointment became effective August 1, 1954.

Secretary Funk is the recipient of Distinguished Engineering Service Award for "untiring efforts on behalf of the engineering profession and unselfish service to this Society and his fellow engineers." He is author of the "Master Plan" for the growth of the State Society, and in 1947 he originated the study course in "Professional Science." He has also been installed recently as president of the New York Chapter.

. . . more news on page 37

PALMER AND BAKER, INC.

Consulting Engineers — Architects

Surveys, Reports, Design, Supervision, Consultation, Traffic Problems, Tunnels, Bridges, Highways, Airports, Industrial Buildings, Waterfront & Harbor Structures. Complete Soils, Materials & Chemical Laboratories.

Mobile, Ala. **New Orleans, La.**
Harvey, Louisiana

A. W. WILLIAMS INSPECTION CO.

Mobile, Ala.

Established 1921

Inspections—Tests—Analyses
Sampling
Foundation Investigations
Representatives throughout U.S.A.

Member A.C.I.L.

KAISER ENGINEERS

Division of Henry J. Kaiser Company

ENGINEERS — CONTRACTORS

1924 Broadway, Oakland 12, California

C. M. HATHAWAY

Consulting Engineer

Electrical—Mechanical—Electronic
Product Development—Project Engineering
Production Designs—Planning
Research—Model Work and Pilot Manufacturing

1315 S. Clarkson St. **Denver 10, Colo.**

F. A. SANDO

Consulting Engineer

Steam Power & Boiler Plants
Incineration Plants

429 E. 14th Ave. **Denver 3, Colo.**

SOUTH FLORIDA TEST SERVICE

Testing—Inspection—Research—Engineers

Consultants and specialists in corrosion, weathering and sunlight testing.

4201 N.W. 7th Street **Miami 34, Florida**

Member A. C. C. L.

LAW—BARROW—AGEE LABORATORIES, INC.

Foundation Investigations

Physical & Chemical Testing

Main Laboratories: Atlanta, Ga.
Charlotte, N. C., Albany, Ga., Tampa, Fla.

MERRITT & WELKER

Engineers

Water Systems — Natural Gas Systems
Sewer Systems — Streets & Roads

Marietta, Georgia

ROBERT AND COMPANY ASSOCIATES

Consulting and Designing Engineers

Industrial Plants—Municipal, Highway and Airport Improvements — Power Plants — Water Supply — Sewage and Industrial Waste Disposal — Appraisals — Reports.

Atlanta **Georgia**

CONSOER, TOWNSEND and ASSOCIATES

Water Supply, Sewerage, Flood Control and Drainage. Bridges, Express Highways, Paving, Power Plant, Appraisals, Reports, Traffic Studies, Airports Gas & Electric Transmission Lines

351 E. Ohio St., Chicago 11, Illinois
9½ N. Indiana St., Greencastle, Ind.

CRESCENT ENGINEERING COMPANY, INC.

Contracting & Consulting Electrical Engineers

Design, Supervision and Construction
Process Power and Lighting for Industrial Plants

6455 S. Central Avenue, Chicago 38, Illinois

DeLEUW, CATHER & COMPANY

Consulting Engineers

Transportation, Public Transit and Traffic Problems

Industrial Plants, Grade Separations, Railroads, Subways, Power Plants, Expressways, Tunnels, Municipal Works

150 N. Wacker Drive, Chicago 6 — **79 McAllister St., San Francisco 2**

WILSON & COMPANY

ENGINEERS

Salina, Kansas
Albuquerque, New Mexico
Denver, Colorado

EUSTIS ENGINEERING COMPANY

FOUNDATION AND SOIL MECHANICS INVESTIGATIONS
Soil Borings—Laboratory Tests
Foundation Analyses—Reports

3635 Airline Highway
New Orleans 20, La.

H. P. WHITE LABORATORY

MECHANICAL TESTING — ANALYSIS
DEVELOPMENT ENGINEERING

Ordnance and Ballistical Research
High Speed Still and Motion Picture Studies

Box 331, Bel Air, Maryland

WHITMAN, REQUARDT & ASSOCIATES

Engineers — Consultants

Civil—Sanitary—Structural
Mechanical—Electrical
Reports, Plans Supervision, Appraisals

1304 St. Paul Street, Baltimore 2, Maryland

ROGER BARRETT BROSS

Registered Professional Engineer

Special Electric Motors & Drives
Electromagnetic Devices
Design & Development
Testing & Consulting

25 Curtis Road **Natick, Mass.**

FAY, SPOFFORD & THORNDIKE

Engineers

John Ayer — Ralph W. Horne
Bion A. Bowman — William L. Hyland
Carroll A. Farwell — Frank L. Lincoln
Howard J. Williams

Airports, Bridges, Turnpikes
Water Supply, Sewerage, Drainage
Port and Terminal Works
Industrial Buildings

BOSTON **NEW YORK**

METCALF & EDDY

Engineers

Water, Sewage, Drainage, Refuse and Industrial Wastes Problems

Airfields — Valuations

Laboratory

Statler Building **Boston 16, Mass.**

COMMONWEALTH ASSOCIATES INC.

Consulting and Design Engineers

Power Generation
Electric—Gas—Water Systems
Industrial Planning

252 W. Cortland St. **Jackson, Michigan**

ORRIN E. FENN

Industrial Engineering and Manufacturing

CONSULTING DESIGN

METAL FABRICATION
SPRAY BOOTHS — INDUSTRIAL OVENS
PARTS WASHERS — DUST COLLECTORS

MT. CLEMENS, MICH.

THE HINCHMAN CORPORATION

CONSULTING ENGINEERS

CORROSION CONTROL—Surveys, Reports, Design, Specifications, Evaluation
UNDERGROUND UTILITIES — Location, Mapping, leakage surveys, electrical grounding systems
HOLLOW PILING—Directional Surveys by electronics

Francis Palms Building **Detroit 1, Mich.**

BETTENBURG, TOWNSEND & STOLTE

Registered Professional Engineers

A complete professional service

1437 Marshall Ave., St. Paul 4, Minn.
Tel.: NEstor 6191

BLACK & VEATCH

Consulting Engineers

Water—Sewage—Electricity—Industry
Reports, Design
Supervision of Construction
Investigations, Valuation and Rates

4706 Broadway, Kansas City 2, Mo.

B. H. BACKLUND & ASSOCIATES, INC.
Consulting Engineers and Architects
Architectural, Civil, Municipal, Structural.
4924 Poppleton Avenue
Omaha 6, Nebraska

GREER & McCLELLAND
Consulting Engineers
FOUNDATION INVESTIGATIONS
98 Greenwood Ave. Montclair, N. J.
2649 N. Main St. Houston, Texas

FRANK E. HARLEY AND ASSOCIATES
Water Works, Sewage, Municipal Highways
Harley Building
260 Godwin Avenue Wyckoff, N. J.

W. W. SLOCUM & CO.
Engineers
Industrial Engineering
Complete Project Design
Management Engineering
National Newark Building
744 Broad St. Newark, N. J.

BROWN & BLAUVELT
Industrial Plants, Bridges, Dams, Airports, Expressways, Parkways, Highways, Preliminary Reports, Engineering Design, Construction Supervision, Material Controls and Testing, Municipal Engineering Services, Tax Maps, Surveying
468 Fourth Avenue New York 16, N. Y.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
Consulting Engineers
Bridges and Structures
Foundations, Highways
Administrative Services
1805 Grand Ave. Kansas City 8, Mo.
55 Liberty Street New York 5, N. Y.

KNAPPEN-TIPPETTS ABBETT-McCARTHY
Engineers
Ports, Harbors, Flood Control, Irrigation, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.
62 West 47th Street New York City

MADIGAN-HYLAND
Consulting Engineers
28-04 41st Avenue
Long Island City, New York

JAMES P. O'DONNELL
Engineers
39 Broadway New York 6, N. Y.
Bowie Building Beaumont, Texas

Restricted to Registered Professional Engineers . . . Directory Continued on Next Page

East Bay Chapter Reports Varied Programs

Members of the East Bay Chapter of the California SPE gathered in the Athens Club in Oakland recently to hear Claude Faw give a lecture on the historic mission trails of California. His lecture was illustrated by color slides. Mr. Faw is manager of public relations at the Armco Drainage and Metal Products Company in Berkeley.

At another dinner meeting on August 16, East Bay P.E.'s heard William Pickle of Business and Industrial Staff Services, a safety consultant for the City of Oakland, speak on *Challenges and Accident Prevention.*

The chapter also held its annual picnic at Tilden Park on August 21.

San Jose Chapter Names Committee Leaders

Committee chairman for the San Jose Chapter of the California Society have been named as follows: *Program* —Arthur Wells; *Membership*—Cyril Tronslin; *Ethical Practices*—George McKinney; *Transportation* — Morris Viele; *Water Resources*—J. Winter Smith; *Fees and Salaries* — Milo Lacy; *Legislative*—George Reynolds; *Education* — Robert Nau; *Finance and Budget* — Connell McRae; *Civil Defense* — Richard Blackburn; and *Public Relations and Publicity*—Leo Ruth.

Third Report Is Distributed In Ohio

As a result of a decision made during the recent OSPE Chapter Presidents' Conference, copies of the third Executive Research Survey Report—*How To Attract and Hold Engineering Talent*—are being sent to the deans of all Ohio colleges and universities including engineering courses in their curricula.

Lloyd A. Chacey, OSPE executive secretary, is handling the distribution of the reports.

. . . more news on page 39

CONNECTICUT P.E.'s MEET—The photo at the right shows newly installed officials of the Fairfield County Chapter, Connecticut SPE, as they gathered in Bridgeport for the year's first business meeting.

Seated, l. to r., are: John L. Harkness, state director; A. A. Coronato, vice president; Ernest D. Mortensen, president; Harry M. Shoketoff, secretary; and Gilpin R. Johns, treasurer. Standing, l. to r., are the chapter's new committee chairmen: James Cael, Public Relations Committee; John Abromaitis, Program Committee; Edwin F. Stolper, Publicity Committee; and William J. Macko, Membership Committee. Mr. Macko is also a Fairfield County director.

PARSONS, BRINCKERHOFF, HALL & MACDONALD

Engineers

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Dams, Canals, Traffic, Parking and Transportation Reports, Power, Industrial Buildings, Housing, Sewerage and Water Supply.

51 Broadway, New York 6, N. Y.

SEELYE STEVENSON VALUE & KNECHT

Consulting Engineers

Richard E. Dougherty, Consultant

Airports, Highways, Bridges, Dams, Water Supply, Sanitation, Tunnels, Industrial Plants, Concrete, Steel, Industrial Waste Disposal, Foundations, Soil Studies.

Civil—Mechanical—Electrical

101 Park Avenue — New York 17, N. Y.

SINGSTAD & BAILLIE

Consulting Engineers

Ole Singstad — David G. Baillie Jr.

Tunnels, Subways, Highways
Foundations, Parking Garages
Investigations, Reports, Design
Specifications, Supervision

24 State St. — New York 4, N. Y.

D. B. STEINMAN

Consulting Engineer

BRIDGES

Design — Construction — Investigation
Reports — Strengthening Advisory Service

117 Liberty Street — NEW YORK CITY

SYSKA & HENNESSY, INC.

Engineers

Design, Reports, Consultation
Power Plant, Disposal Plant, Water Systems

NEW YORK, N. Y.

Chicago — Cleveland — St. Louis

ADACHE & CASE, ENGINEERS

The Arcade, Cleveland 14, Ohio

Consulting • Design • Reports
• Mechanical • Electrical • Civil
• Industrial Buildings •

ELMER S. BARRETT ASSOCIATES

Consulting Engineers

Surveys—Design—Inspection

Highways — Municipal
Bridges — Reports
Transmission Lines

249 S. Paint St. — Chillicothe, Ohio
Phone: 34600

GEORGE W. BRANDT, ENGINEER

Consulting • Design •

Mechanical • Development • Fabrication

Box 101 — West Milton, Ohio

GUSTAVE M. GOLDSMITH

Consulting Engineer

General Structures — Plant Layout

Design—Investigation—Quantity Surveys

1734 Bella Vista — Cincinnati 37, Ohio

EMMET J. McDONALD

CIVIL ENGINEER

HIGHWAYS, MUNICIPAL, SURVEYS

326 S. Main St. — Akron 8, Ohio

MAURICE P. MILLIKEN

Research and Development Consultant
Professional Engineer

Experimental stress analysis. Physical testing, Consultation, Reports, Product Design, Experimental tests in your plant.

239 Marguerite Ave., Cuyahoga Falls, Ohio

FOUNDATION INVESTIGATIONS
SOIL MECHANICS—BORINGS
WATER DISTRIBUTION
STUDIES—WASTE SURVEYS

THE H. C. NUTTING CO.

4120 Airport Rd., Cincinnati, O.
2145 N.W. 2nd Ave., Miami, Fla.

TOLEDO TESTING LABORATORY

Engineers and Chemists

Concrete — Soils — Asphalt
Inspection — Tests — Supervision
Consultation — Specifications and
Investigation of
Engineering Works and Materials

1810 North 12th St. — Toledo 2, Ohio

OKLAHOMA TESTING LABORATORIES

Registered Engineers—Chemists
Oklahoma City, Okla.

Materials Testing and Inspection

Member A. C. C. L.

C. A. Lashbrook, Owner-Director — M. A. Witte, Chief Engineer

---

ALBRIGHT & FRIEL, INC.

Consulting Engineers

COMPLETE ENGINEERING SERVICE
Including Design and Supervision of Construction
Water, Sewage and Industrial Wastes Problems
Airfields, Refuse Incinerators, Dams
Power Plants, Flood Control, Industrial Buildings
City Planning, Reports, Appraisals and Rates
Laboratory For Chemical & Bacteriological Analyses

121 South Broad St., Philadelphia 7, Pa.

CAPITOL ENGINEERING CORPORATION

Engineers—Constructors—Management

Design and Surveys — Roads and Streets
Sewer Systems — Water Works
Planning — Airports
Bridges — Turnpikes — Dams

Executive Offices: Dillsburg, Pennsylvania
Washington, D. C. — Pittsburgh, Pa.
Dallas, Texas — Paris, France

ELECTRO-SEARCH

Consulting Electronics Engineers

Specialists on Shielding & Radio-Interference Problems

4337 N. 5th St. — Philadelphia 40, Pa.

FRAZIER-SIMPLEX, INC.

CONTRACTING & CONSULTING ENGINEERS

Furnace Engineering for the Glass and Steel Industries

436 East Beau Street, WASHINGTON, PA.
U. S. A.

GANNETT FLEMING CORDDRY & CARPENTER, INC.

Engineers

Water, Sewage, Roads, Turnpikes, Bridges, Airports, Traffic, Appraisals.

HARRISBURG, PA.

Philadelphia, Pa. — Daytona Beach, Fla.
Pittsburgh, Pa. — Medellin, Colombia, S. A.

LAWRIE & GREEN & ASSOCIATES

Architectural and Engineering Offices

321 N. Front Street
Harrisburg, Pennsylvania

Ritchie Lawrie, Jr., P.E., Consulting Engineer

MODJESKI AND MASTERS

Consulting Engineers

G. H. Randall, C. W. Hanson — F. M. Masters — J. R. Glen, H. J. Engel

Design and Supervision of Construction
Inspection and Reports
Bridges, Structures and Foundations

State St. Bldg., Harrisburg, Pa. — New Orleans, La., Philadelphia, Pa.

CYRUS WM. RICE & CO., INC.

Consulting Chemical Engineers

Industrial Water and Waste

16 Noble Avenue, Pittsburgh 5, Penna.

EMERSON VENABLE

Chemist and Chemical Engineer

Chemical Analysis
Research — Development
Trouble Shooting

6111 Fifth Ave., Pittsburgh 32, Pa.

CORMIT ENGINEERING COMPANY

Marshall E. Parker, P.E.

CORROSION — CATHODIC PROTECTION
Surveys, Reports, Design, Specifications
Coating Inspection
UNDERGROUND PIPING, WATER TANKS, OFFSHORE PLATFORMS, BARGES, PILING

M & M Building — Phone FAirfax 9953
No. 1 Main Street, Houston 2, Texas

THOMAS E. DUCE ASSOCIATES
Consulting Engineers
Electrical and Mechanical
Murray Building
1733 S. Brownlee Blvd., Corpus Christi, Tex.

ENGINEERS TESTING LABORATORY, INC.
FOUNDATION AND SOIL MECHANICS INVESTIGATIONS
Soil Borings — Laboratory Tests
Foundation Analyses — Reports
1313 Main Street — Houston, Texas

FORREST and COTTON
CONSULTING ENGINEERS
Regional Water Supplies
Water and Sewage Works
Industrial Development
Airports — Dams
Appraisals — Reports
803 Praetorian Building — Dallas 1, Texas

FREESE & NICHOLS
Consulting Engineers
407-410 Danciger Bldg.
Fort Worth 2, Texas

LLOYD N. ROBINSON, Fel. AIEE
Consulting Engineer
Registered in N. Y., Washington & Alaska
ELECTRIC POWER
Generation, Transmission, Distribution and Applications
Stuart Building — Seattle 1, Wash.

PROFESSIONAL .ENGINEERS..
List your Card in this Professional Directory. Rates: $6.00 per issue, twelve times basis
AMERICAN ENGINEER
1121 15th Street N.W. Wash. 5, D. C.

. . . Supplemental Services . . .

EHRCO DIE CASTING SERVICE
Engineering Consultation—Die Castings
Equipment—Installation
Die and Product Design
John R. Ehrbar, P.E., Pres.
303 Main Street, Stamford, Connecticut
Telephone 3-2308

MERCURY ENGINEERING CO.
Milton V. Wilker, P.E.
- Automatic Machine & Tool Design
- Checking and General Drafting
- Service Manuals to Govt. Specifications
- Catalogs, Exploded Views, Airbrushed Photos, Multilith Plates

10 W. Erie Ave. — Rutherford, N. J.
GEneva 8-7307

BUILDERS ESTIMATING SERVICE
COST ESTIMATES
QUANTITY SURVEYS
CONSTRUCTION ANALYSIS
MATERIAL PURCHASE LISTS
140 Nassau Street — Telephone
New York 38, N. Y. — Beekman 3-0553

EASTERN HEAT TREATING & BRAZING CORP.
Precision Heat Treatment and Brazing
Induction Heat — Heli-Arc-Welding
Hydrogen Atmospheric Cycles
Affiliated Company:—
EASTERN METALS INDUSTRIES, INC.
Metallic Bellows & Diaphragm Assemblies
250 West 54 Street, New York 19, N. Y.
Joseph Lipset, P.E., Pres.

MAX STERN, P.E.
Consulting Engineer
Specializing in
Metallurgy & Engineering Of
Ferrous & Non-Ferrous Scrap Recovery
149 Broadway, New York 6, N. Y.
Telephone: BEekman 3-5888

POTTEIGER COMPANY INC.
Builders for Engineers
328 Tulpehocken Ave., West Reading, Pa.

With the Ladies

By MRS. FRANK W. CHAPPELL
Chairman, NSPE Ladies Advisory Committee

New officers have been elected by the Auxiliary to the Lorain County Chapter of the Ohio SPE. They are: Mrs. E. R. Fitch, president; Mrs. J. E. Gilkey, vice-president; Mrs. D. E. Kropp, secretary; and Mrs. D. D. Dobreff, treasurer. The election was held at the home of Mrs. Walter Fleming, the outgoing president of the group.

At the recent executive board meeting of the Texas SPE, held in Austin, Mrs. L. V. Norris was elected chairman of the State Advisory Committee of the TSPE's Ladies' Auxiliary.

Word has recently been received that an Auxiliary to the Rockford Chapter of the Illinois SPE is being organized. The first auxiliary-sponsored activity was scheduled to be a family picnic.

The newly-organized State Auxiliary to the Oklahoma SPE has recently issued a yearbook listing 317 charter members and has set up a program of activities designed to increase membership and also promote interest in National Engineers' Week.

Rhode Island P.E.'s In Publishing Field

The Rhode Island Society of Professional Engineers is now one of the co-publishers of the *New England Professional Engineer.* The other sponsors of the magazine are the Connecticut and Massachusetts Societies. Rhode Island participation in the publication began with the July issue.

Traffic Problems Are Meeting Topic

A recent meeting of the Central Illinois Chapter of the ISPE was devoted to the consideration of traffic problems from an engineering viewpoint.

The meeting was held at the St. Nicholas Hotel in Decatur, and a sound movie on the traffic situation was also shown during the evening.

Hudson County Group Installs New Officers

At a recent dinner meeting held at the Fairmount Hotel in Jersey City, N. J., outgoing President James F. Kelly of the Professional Engineers Society of Hudson County installed the newly-elected officers for the 1954-55 administrative term.

Roy M. Henwood, founder of the New York consulting firm of Henwood Associates, is the new president of the chapter. Other officers are: Jeremiah Roach, first vice president; Nicholas F. Perrin, second vice president; Leonard Mayo, secretary; William C. Farmer, treasurer; Bernard M. Schmitter, financial secretary; John P. Curley, recording secretary; and Frank M. Ballou, trustee.

Registration

(*Continued from page* 34)

years. Less than a third of the states had engineering registration laws and many engineers thought the whole thing was on its way out. However, there were champions of registration who would not be denied. Their deep convictions, their personal sacrifices and their exceptional abilities finally won over, and from 1935 on the movement became an avalanche which rolled relentlessly until the last state adopted such a law.

Every new law produced a crop of "grandfathers." The Constitution of the United States prevents any law from depriving any man of the privilege of continuing any legal method through which he made his living—so during the first year all new laws grant "grandfather" registration to any man who takes an oath that, in the past, he made his living through the practice of engineering. The element of time is slowly eliminating any inequities thus created. The average "grandfather" still practicing has now been doing so for twenty years since he was registered and most of them would qualify today through "eminence."

Before 1890, most engineers acquired their education from an older man or by self-instruction. There just weren't enough text books on engineering subjects around with which to organize a full college engineering curriculum.

THEN came good text books, top-grade professors and excellent research laboratories. In recent years, companies like G.E., Westinghouse, A.T.&T., airplane manufacturers, etc., can hire large numbers of well-educated engineer graduates, all set for development work, intensified training, research laboratories or what have you. Phenomenal progress has followed. The great number of educated and prepared young engineers and young scientists available to industries today constitutes one reason why we have witnessed such miraculous progress.

So with our advanced text books, professors, research, laboratories and approximately 400,000 educated engineers, we are climbing up the professional ladder and we seek full professional recognition.

Wyoming got the first engineering registration law back in the days when the United States Government would bet a homesteader 160 acres of land that he couldn't live on it for three years. Without money for engineering service, many homesteaders would record their water filings by tying their diversion point into a section corner, using only the top of a desk and then signing their own names as engineers. Another state legislature passed an engineering registration law the next session after a rabbit had dug a hole through a self-designated engineer's concrete foundation.

Registration condensed into one brief sentence means "keeping out the unfit." Registration is a screen which should pass freely those who are competent and which should screen out all those who are incompetent.

No profession can gain high respect unless the minimum standard is high and registration provides the only path to this goal.

Excessively high standards would become undesirable, less engineering become an exclusive club for the "eminent." Then engineering registration would bcome "class legislation" and any protective law would become unconstitutional. No registration should carry past the point where it permits the competent to work and prevents the incompetent from deceiving. Some advantages of registration to engineers are:

1. The Taft-Hartley law says professional men need not join a collective bargaining group in which they form a minority.

2. Some states (and others will follow) list engineering registration as a requirement for some promotions.

3. In many states, engineering plans will not be accepted for official filing unless the engineer is registered.

4. Engineering fees need not be paid by an owner unless the engineer is registered. Registration is a legal requirement and an engineering contract has no legal standing unless the engineer is registered. When controversies arise, such engineers can and have lost their entire fee.

5. In most civil courts an engineer cannot qualify as an "expert" unless he is registered.

6. If a registered engineer makes a mistake resulting in loss of life or property—it becomes a mistake of professional judgment; if not licensed the man is guilty of a criminal act. Registration will reduce or eliminate such "mistakes."

Recent results of engineer examinations from one state show:

74% from accredited colleges passed.
47% from non-accredited colleges passed.
Only 20% without college education passed.

From these results it is possible to give a young man who wants to be an engineer two well-selected pieces of advice:

1. Go to an engineering college
2. Select a college accredited by ECPD

People love to adopt the sobriquet "engineer." We still have drug store clerks using "Master Soda Fountain Engineers," janitors using "School Maintenance Engineers," and we even have "The American Society of Exterminating Engineers."

But the term "Professional Engineer" belongs to us. Let's revere it, let's respect it, let's emulate it and let's defend it. Registration is the only way to eliminate the unfit. Let's work to advance the significance of the terms "Professional Engineer" and "Registration" to where even those who are not legally required will want to register through professional pride. Then let us reach for the goal of the dreamer where everyone qualified for registration will register.

Then the mark of a Professional Engineer will simply be "Registration."—***End.***

KENNEDY-RIEGGER DRILLING CO., Inc.
Diamond Drill & Core Borings
TEST BORINGS
5418 Post Road New York City
Telephone KI 9-8458

AEROFIN
CORPORATION
Syracuse New York

Strictly Business

Personalities . . . The officers and directors of RILCO LAMINATED PRODUCTS, INCORPORATED, have announced the appointment of RALPH H. FULBRIGHT as vice president in charge of production and other related activities of the company's operations at Albert Lea, Minn., and Independence, Kan. . . . CARL J. FORSBERG, Madison, Wis., has been elected president of the WISCONSIN POWER AND LIGHT CO. JOHN E. CANFIELD has been elected vice president in charge of district operations and sales, and E. J. KALLEVANG has been elected vice president in charge of engineering, system operation, and maintenance. J. D. HOWARD will be assistant to Mr. Kallevang. . . . Four new vice presidents have been elected by the board of directors of the BELL & GOSSETT COMPANY, Morton Grove, Ill. They are: W. A. BOONE, H. A. LOCKHART, R. A. MARQUARDT, and C. R. SMITH. Mr. Lockhart has been chief engineer of the company since 1934 and retains that post as vice president. . . . THOMAS C. KAVANAGH has resigned as professor and chairman of the Department of Civil Engineering at New York University in order to devote full time to the consulting firm of PRAEGER-KAVANAGH, Engineers, of New York City. . . . ROBERT H. LOCHOW has been appointed district engineer of the Seattle, Wash., office of the PORTLAND CEMENT ASSOCIATION, according to an announcement by CARL D. FRANKS, Association president.

Mr. Fulbright

EDWARD R. LEE, JR., has been appointed power engineer for KAISER ENGINEERS, a division of the HENRY J. KAISER COMPANY. . . . R. C. ARCHER, vice president, INTERNATIONAL HARVESTER COMPANY, has announced the appointment of OTTO A. KRUEGER as manager of the company's industrial engineering and construction department. HAROLD W. PARTHEIMER has been made assistant manager of the department. . . . ALFRED A. GASSNER has been named vice president for engineering with LUNN LAMINATES, INC., Huntington Station, N. Y., and Ashtabula, O., custom molders of reinforced plastics, according to JAMES S. LUNN, company president and chairman of the board. . . . THURSTON KLAYTON, director of engineering research and development for LURIA ENGINEERING COMPANY, has been given the additional title and duties of chief engineer. He makes his headquarters at Bethlehem, Pa., where the firm's 60-man engineering staff is centralized. . . . TAYLOR FORGE & PIPE WORKS, Chicago, announces the appointment of GEORGE SAUM as manager, TAYLOR FORGE AIRCRAFT PRODUCTS DIVISION. . . . BLAW-KNOX COMPANY has announced the appointment of JOHN PENDERGAST as domestic sales manager of its FOOTE CONSTRUCTION EQUIPMENT DIVISION, Nunda, N. Y. . . . W. H. SMOCK has been appointed superintendent of the SHERWIN-WILLIAMS COMPANY'S Chicago lacquer department.

Mr. Gassner

Operational Expansion . . . ARTHUR D. LITTLE, INC., of Cambridge, Mass., has announced the opening of its WESTERN LABORATORIES DIVISION (formerly THE MERRILL COMPANY) through which its services will be directly available to West Coast industry. CHARLES G. HARFORD is technical director and RAYMOND E. BYLER is business manager of the new division which is located in San Francisco. . . . U. S. FIRE PROTECTION ENGINEERING SERVICE, INC., has established a new Chicago office, which will be managed by JOHN T. W. BABCOCK who has recently been elected a vice president of the consulting firm. . . . FISCHER & PORTER COMPANY, Hatboro, Pa., has recently acquired the patents and engineering personnel of the ELECTRICAL DEVELOPMENT COMPANY, INC., and the DIGI-CODER CORPORATION and has established a new data reduction and automation division. . . . A multi-million-dollar expansion program that will double the capacity of the AMERICAN CAN COMPANY'S St. Paul, Minn., plant has been announced by the firm.

Mr. Babcock

As a part of a program of expansion into the electronics field, W. R. BURWELL, president of BRUSH ELECTRONICS COMPANY, Cleveland, O., a division of CLEVITE CORPORATION, has announced that the firm has purchased the assets of the DIGITAL INSTRUMENT COMPANY, Coral Gables, Fla. The products formerly manufactured by Digital will be integrated into the Brush line; and MERYL C. BURNS, former president of the Florida concern will serve as manager of the resultant Digital Instrument Department of Brush Electronics. . . . Construction has begun on a large modern complete refinery at Guayanilla Bay, Puerto Rico, for COMMONWEALTH OIL REFINING COMPANY, INC., according to ADMIRAL A. F. CARTER, chairman of the board. The LUMMUS COMPANY of New York, engineers, designers, and constructors in the undertaking, has scheduled completion of the project for the last half of 1955. . . . AERO ENGINEERING COMPANY, a division of THE GARRETT CORPORATION, has opened a new office in St. Louis, Mo., according to FRANK MILES, corporation vice president. DONALD E. FLINN will head Aero sales activities in the St. Louis area.

►

Name Changes . . . HARRY A. BALKE has announced a change in his firm's name to HARRY BALKE ENGINEERS, Consulting Engineers. The firm has offices in Cincinnati, O., and Urbana, Ill. . . . FEDERAL ELECTRIC PRODUCTS COMPANY, Newark, N. J., has changed its name to FEDERAL PACIFIC ELECTRIC COMPANY, according to an announcement by T. M. COLE, president. This is in line with the recent merger of the former FEDERAL ELECTRIC PRODUCTS COMPANY with its wholly-owned subsidiary, PACIFIC ELECTRIC MANUFACTURING CORPORATION. . . . L. G. KRANICK, president has announced a change in the name of the MILWAUKEE METAL WORKING COMPANY to WISCONSIN HYDRAULICS, INC.

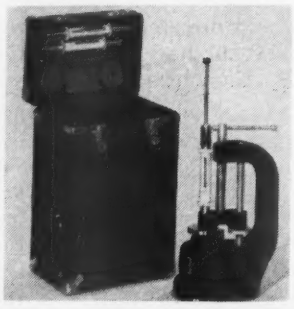
What's New

AMERICAN ENGINEER Sept., 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 1 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

UNIQUE TESTING KIT — Item 1



Metals, plastics, ceramics and quartz surfaces can be checked with a new portable hardness testing lab. weighing less than 15 pounds, indispensable for field engineers, traveling inspectors, with many new applications for industrial use. Designed by Peabody Industrial Co. includes two 7 oz. instruments, one for testing steel in the hard range, incorporating both Rockwell C. and Brinell 3000 K. g. equivalents. Non ferrous instrument has the Rockwell B. and 500 K. g. Brinell scales. All hardness values read directly. No conversions necessary.

AMERICAN ENGINEER Sept., 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 2 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

CENTRAL AIR CONDITIONING — Item 2

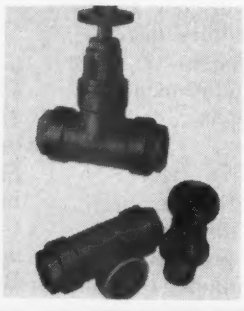
Two new central air conditioning units for domestic and light commercial applications have just been announced by Iron Fireman Manufacturing Co. One unit is especially designed to be used in combination with the Iron Fireman oil-fired or gas-fired suspended furnace. Amazingly compact, yet permits easy access to all its components. Two-ton and three-ton sizes. Air circulation and filtering are provided by the furnace, or by a separate blower. The second unit, designed to match the Iron Fireman Highboy oil or gas furnace, is available in two-ton capacity. Both available with or without cooling towers. With either single phase or three-phase compressor motors. Hermetically sealed cooling systems.

AMERICAN ENGINEER Sept., 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 3 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

MOLDED VALVES OF POLYVINYL CHLORIDE — Item 3



A new line of molded, Globe-type polyvinyl chloride valves, recently developed by Stokes Molded Products, incorporate many unusual efficiency and economy features. Non-corrosive and applicable throughout the chemical process, petroleum, rayon, plating and allied industries in places where medium pressures and temperatures not exceeding 160° F. are required. Valves are made to fit pipe sizes of ½", 1" and 1½" while maintaining full flow characteristics. Stem can be repacked under full line pressure.

AMERICAN ENGINEER Sept., 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 4 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

LIQUID ZINC FOR RUST CONTROL — Item 4

Zinktron, new, simplified and much-advanced product to prevent rust on gutters, corrugated roofing, other metal building materials, farm machinery, and any iron or steel surfaces, is now available through Constad Laboratories. The manufacturer claims that the coating offers all the advantages of "hot dip" galvanizing with none of the expense or inconvenience. The product differs basically from other types of metallic paints in that it can be used over rusted surfaces (loose scale removed) and that a galvanic action takes place through the rust. Zinktron is applied with paint brush or spray gun. A gallon covers 450 square feet. Takes only one hour to dry.

AMERICAN ENGINEER Sept., 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 5 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

PHOTOCOPYER — Item 5

Hunter Photo Copyist, Inc., has perfected a new machine for office reproduction work. Operating on a revolutionary new principle, similar to that employed by the self-developing camera, the new Hecco-kwik produces immediate, dry copies of any typed, printed, written or drawn material. Hunter engineers stressed simplicity of operation, together with durability, in designing the Hecco-kwik. The unit is noiseless in operation, and occupies little more space than an ordinary typewriter. Any material up to 12 inches in width, any length, may be reproduced.